U.S. POLICY ON EXPORT OF HELIUM-3 AND OTHER NUCLEAR MATERIALS AND TECHNOLOGY

HEARING

BEFORE THE

SUBCOMMITTEE ON ENERGY, NUCLEAR PROLIFERATION, AND GOVERNMENT PROCESSES

OF THE

COMMITTEE ON GOVERNMENTAL AFFAIRS UNITED STATES SENATE

NINETY-SEVENTH CONGRESS

SECOND SESSION

MAY 13, 1982

Printed for the use of the Committee on Governmental Affairs

U.S. GOVERNMENT PRINTING OFFICE

11-269 O WASHINGTON: 1982

S401-21

COMMITTEE ON GOVERNMENTAL AFFAIRS

WILLIAM V. ROTH, JR., Delaware, *Chairman*

CHARLES H. PERCY, Illinois	THOMAS F. EAGLETON, Missouri
TED STEVENS, Alaska	HENRY M. JACKSON, Washington
CHARLES McC. MATHIAS, JR., Maryland	LAWTON CHILES, Florida
JOHN C. DANFORTH, Missouri	SAM NUNN, Georgia
WILLIAM S. COHEN, Maine	JOHN GLENN, Ohio
DAVID DURENBERGER, Minnesota	JIM SASSER, Tennessee
MACK MATTINGLY, Georgia	DAVID PRYOR, Arkansas
WARREN B. RUDMAN, New Hampshire	CARL LEVIN, Michigan
HARRISON "JACK" SCHMITT, New Mexico	

JOAN M. MCENTEE, *Staff Director*
IRA S. SHAPIRO, *Minority Staff Director and Chief Counsel*

SUBCOMMITTEE ON ENERGY, NUCLEAR PROLIFERATION, AND GOVERNMENT PROCESSES

CHARLES H. PERCY, Illinois, *Chairman*

DAVID DURENBERGER, Minnesota	JOHN GLENN, Ohio
WILLIAM S. COHEN, Maine	HENRY M. JACKSON, Washington
MACK MATTINGLY, Georgia	CARL LEVIN, Michigan

WILLIAM A. STRAUSS, *Chief Counsel and Staff Director*
DAVID G. NICHOLS, JR., *Professional Staff Member*
LEONARD WEISS, *Minority Staff Director*
KATHRYN H. FROELICH, *Chief Clerk*

CONTENTS

Opening statements: Page

Senator Percy 1
Senator Glenn 4

WITNESSES

THURSDAY, MAY 13, 1982

Richard T. Kennedy, Under Secretary of State for Management, Department of State, accompanied by James Devine, Deputy Assistant Secretary, Department of State 11
Henry E. Thomas, Assistant Secretary for International Affairs, Department of Energy, accompanied by Hal Bengelsdorf, Director of the Office of International Nuclear Non-Proliferation Policy, and Jack Griffin, Office of International Security Affairs 57
Ronald F. Lehman II, Deputy Assistant Secretary of Defense, Strategic and Theatre Nuclear Forces, Department of Defense 68

ALPHABETICAL LIST OF WITNESSES

Bengelsdorf, Hal: Testimony 57
Devine, James: Testimony 11
Griffin, Jack: Testimony 57
Kennedy, Richard T.:
Testimony 11
Prepared statement 36
Lehman, Ronald F., II:
Testimony 68
Prepared statement 71
Thomas, Henry E.:
Testimony 57
Letter to Senator Percy, July 7, 1982 63

ADDITIONAL MATERIAL SUBMITTED FOR THE RECORD

"Nuclear Supplier Export Controls," remarks by Senator Glenn in the Congressional Record, May 12, 1982 6
Text of S. Con. Res. 96 8
Letters to:
James B. Edwards, Secretary, Department of Energy, from Senator Percy, April 23, 1982 73
Senator Percy from Guy W. Fiske, Under Secretary, Department of Energy, May 11, 1982 74
Malcolm Baldrige, Secretary of Commerce, from Senator Percy, April 29, 1982 75
Senator Percy from Malcolm Baldrige, Secretary of Commerce, May 12, 1982 77
Statements of:
Bo Denysyk, Deputy Assistant Secretary for Export Administration, Department of Commerce 80
Henry David Sokolski, visiting scholar, The Heritage Foundation 85
Reports—Congressional Research Service, Library of Congress:
"An Analysis of Official Argentine Statements on the Purpose and Direction of Argentina's Nuclear Program," April 22, 1982 100
"Argentina's Nuclear Power Program: A Study," April 15, 1982 118
"Argentina's Closeness to Nuclear Weapons," May 12, 1982 137

U.S. POLICY ON EXPORT OF HELIUM-3 AND OTHER NUCLEAR MATERIALS AND TECHNOLOGY

THURSDAY, MAY 13, 1982

U.S. SENATE,
SUBCOMMITTEE ON ENERGY, NUCLEAR PROLIFERATION,
AND GOVERNMENT PROCESSES,
COMMITTEE ON GOVERNMENTAL AFFAIRS,
Washington, D.C.

The subcommittee met at 10:15 a.m., in room 6226, Dirksen Senate Office Building, Hon. Charles H. Percy (chairman of the subcommittee) presiding.

Present: Senators Percy and Glenn.

OPENING STATEMENT OF SENATOR PERCY

Senator PERCY. For once I am very glad that we had a delay in the opening of this hearing. Not because we have inconvenienced you in any way, and I know we have, but Secretary Kennedy was delayed and we had a vote on the floor. So it worked out just fine.

I am delighted to open these hearings. I have been downstairs before the vote with the former CIA Director Colby who is testifying on the nuclear hearings that we have been holding—a series of hearings which I consider the most important hearings that any of us probably ever held on any subject: "How do we prevent nuclear war?"

I announced down there that we would begin up here at 10 o'clock on another phase of it, that there we are dealing entirely with how we prevent the possibility of a war between ourselves and the Soviet Union, the other superpower.

But here we are dealing with an equally important aspect of that same problem.

In the past few months the citizens of the United States have expressed more concerns about nuclear weapons than I have ever heard in my 15 years in the Senate. Many times we have held hearings on nonproliferation. For instance, in this room several years ago, Senator Glenn and I offered a bill that is now law, the Nuclear Non-Proliferation Act. We would sit there alone in an empty room. There just wasn't anyone else really concerned about this problem.

But the public outcry that has been unfolding over recent months has mainly addressed the problems and dilemmas of the growing nuclear arsenals of the United States and the Soviet Union.

Today the Energy, Nuclear Proliferation, and Government Processes Subcommittee of Governmental Affairs will look at that other arms race—the spread of nuclear weapons to nations that do not now have

them. We have to face the fact that some 20 nations in the foreseeable future could have weapons capability unless something is done about it.

While the United States and the Soviet Union have avoided face-to-face conflict since the dawn of nuclear weapons, the world as a whole has seen regional wars and revolutions aplenty over that time span. What if India and Pakistan had the bomb when they clashed in 1971? What if a nuclear device had been in Iran during its revolution? Who would have it now? How would the world be different if Colonel Qaddafi—and assorted terrorists and fanatics—had these weapons? Certainly they want them. They are doing everything they can to get them.

Our inability to respond to these questions speaks eloquently to the real dangers in the spread of nuclear weapons. Yet the day might not be far away when we will learn the answers to these questions the hard way.

The Falkland Islands crisis, for example, is just the sort of regional incident that could become a global catastrophe if nuclear arms were involved. Argentina has a very advanced nuclear program, with unsafeguarded facilities.

To date, it has not signed the Non-Proliferation Treaty and has carefully reserved the right to make nuclear weapons. Today, I am releasing a Congressional Research Service report that says Argentina could have a nuclear explosive within 5 years.[1] Others say they could have a bomb even sooner than that.

Despite all this, some nuclear suppliers—including some of our closest allies—continue to cooperate with Argentina by supplying technology and equipment.

The situation is plausible enough that Senator Helms asked in an open hearing just yesterday whether or not the UK actually had a nuclear weapon in the South Atlantic area.

The answer was not given, of course, in open session. The question was raised.

Argentina is not alone—the same thing is happening in a number of other nations.

This policy of nuclear laissez-faire by the world's nuclear suppliers is slowly but certainly bringing us closer to a day when a future Falkland Islands style crisis becomes a nuclear confrontation. Twenty years ago, the United States and the Soviet Union came perilously close to a nuclear war. I am not sure that the world can survive more than a handful of these brushes with atomic holocaust. I am certain our luck would not survive the scores of confrontations that would be part of life in a proliferated world. If nuclear weapons continue to spread, someday, somewhere, somebody is going to use the bomb. What that might trigger, Heaven only knows.

The United States has long been the world's preeminent nuclear supplier. While our dominance in nuclear exports means that we have done the most to spread this technology around the globe, it also means that we have the greatest opportunity—and responsibility—to prevent the further spread of nuclear arms. It makes little sense for the United States to maintain unilateral embargoes for certain products. But we

[1] See p. 137.

must have our own house in order before we attempt to curb international commerce in dangerous goods and materials.

Recently, I have become disturbed that nonproliferation is slipping among our foreign policy priorities. One particularly worrisome example I have discovered is our apparent intention to export a large quantity of helium-3 to South Africa—another nuclear renegade that could make weapons, if it so chooses. Helium-3 is a material that can be converted into fuel for a thermonuclear explosive, and the United States is the only nation in the free world that exports it.

I can see no justification for providing any thermonuclear weapon material to a nation like South Africa. If we go ahead with this export, we would abandon any claim we might have on other suppliers to adopt and maintain strict export guidelines.

Why is it that nuclear proliferation is just not receiving the attention it should? Is it because the issue is so technical? Is it because we have all decided there are more important issues to worry about—though I cannot imagine what they would be. Or is it because we have simply thrown in the towel, given up trying to slow the race for the bomb? I don't know the answer, but it is clear to me that this issue must be at the top of our agenda. Aside from the risk of superpower confrontation, there is no single problem in the world today that poses so great a threat to our security—and to our children's security—than nuclear proliferation.

Stopping the bomb is neither easy nor cost free. But the consequences of failure are so great that we must try. I have no illusions that the United States can easily change the minds of nations now trying to build nuclear weapons. But through our continuing leadership, we can at least give the world a chance to avoid nuclear nightmares in the decades to come.

And certainly the fact that we did pass a nuclear-free zone area in the Western Hemisphere, even though unsigned by Cuba and Argentina and some other nations, will at least isolate those countries that are unwilling to face the reality of this problem.

Once again, I am delighted to have Senator Glenn with me. We have disagreed on some issues and we even disagreed on interpretations of the same law that we wrote—how it should be applied to India, for instance. But there isn't any disagreement between us on the urgency of this problem.

As I have mentioned before you came in, we sat here holding hearings to an empty room, except for the witnesses, through the years trying to arouse some interest in this subject. It is very gratifying indeed for the two of us and I know the entire Senate as well to have this room filled today with concerned citizens who are, in a sense, saying what we have always said: War is too important to leave to generals.

Now people seem to be saying nuclear war is too important just to leave to governments, to the slow processes with which they are working.

We want faster action, but it has got to be done through government. There is no way to negotiate through the Soviet Union or Argentina, other than through governments. We must take the leadership and

again I appreciated very much the invitation we had from you, Secretary Kennedy, to sit down and spend a whole 2-hour luncheon just talking on this subject, at which Eugene Rostow and you just a few weeks ago cleared a lot of air. We got a chance to express our concerns and you are very generous to testify before us. Now we would like to hear from you.

I would like to have Senator Glenn make any opening statement he cares to make.

OPENING STATEMENT OF SENATOR GLENN

Senator GLENN. Just a short statement, Mr. Chairman. I, too, am pleased to see the interest in this subject now.

I recall very well those days when we used to joke about the fact that when you brought up something about nuclear nonproliferation we called it a MEGO issue: "My eyes glaze over." That is what happened usually when we started talking about nuclear nonproliferation several years ago.

I hope that all of the interest in this that we are seeing today is not the fad of the spring of 1982. I have challenged some of the students and the groups that are here demonstrating and showing their concern over the superpowers nuclear weaponry that we have to have two to make an agreement in this area. I challenged them to get all of the Soviet signatures they can get, write to Soviet citizens in Russian. Collect the addresses of Soviet citizens, write to them, put in for visas, travel to the Soviet Union.

Right now that is the situation we are in in this country with all of us who believe in reducing nuclear weapons preaching to each other. It is like Oral Roberts trying to convert Billy Graham. We are all the committed, but you must go over to the other side. That is the way to obtain a balance here, to get us someone to agree with. I think we should have a million visa applications with the Soviet Embassy, and all of these visitors should go to the Soviet Union and talk to the people there at Kiev, Vladivostok, and Moscow. We need to generate the same kind of interest on the other side. This must not be merely the fad of the spring of 1982 and I believe it is not.

But, Mr. Chairman, that departs from what I was going to say.

I want to congratulate you for holding this hearing especially at a time when there is a great deal of attention being paid to the subject of vertical proliferation through the consideration of the nuclear freeze concept.

I happen to believe personally, Mr. Chairman, that the spread of nuclear weapons to other countries, so-called horizontal proliferation, poses a threat which will be seen in future years to be at least as great to our national security as the threat posed today by the weapons of the Soviet Union. That is why, in my own freeze resolution, I have included consideration of horizontal proliferation as one of the key points in any comprehensive arms control program.

First, we need limits on these weapons in the United States and U.S.S.R.; then we must reduce their numbers. Then we must prevent their spread. And for all of this we must involve other nations. Those four points are essential.

In a few weeks from now, on June 7, we will have the first anniversary of Israel's attack on Iraq's Osirak reactor. It is important to recall that the U.S. Senate passed a resolution, S. Res. 179, on July 17, 1981, 2 days before President Reagan went to the Ottawa summit. That resolution called on the President to engage in discussions with the other nuclear supplier nations for the purpose of adopting specific improvements to the international nonproliferation regime. Although the resolution was passed without a dissenting vote—passed on the floor 88 to nothing—it was basically ignored at the Ottawa summit, and has been ignored by the administration ever since.

Next month, between June 4 and June 6—literally on the eve of the anniversary of the Israeli raid—President Reagan will attend another summit conference with our major European allies at Versailles.

Once again he will have the opportunity to raise, at the highest level, the urgent need to strengthen the barriers against the spread of nuclear weapons. Accordingly, Congressman Bingham and I have introduced resolutions in both the House and the Senate which reaffirm the resolutions that were passed in those bodies last year and which call on the President specifically to seek agreement among the other supplier countries at Versailles that nuclear exports will be made only to those nonnuclear-weapon states that have accepted full-scope safeguards. That is a minimal first step toward the wider agreement that is needed in accordance with the provisions of S. Res. 179 to strengthen the nonproliferation regime.

Mr. Chairman, you were a strong supporter of S. Res. 179 last year, so I would hope you would see fit to contribute your support to moving the present resolution through the Foreign Relations Committee so that we can get it to the floor quickly and act upon it before the President goes to Versailles.

With respect to today's hearing, it is my intention to ask the witnesses their views of the resolution, as well as to question them on specific areas where we are having problems, India, Pakistan, Argentine, South Africa, Brazil. We would like to know to what extent the other suppliers are cooperating with us and whether we are losing ground in our effort to control the spread of nuclear weapons.

Thank you, Mr. Chairman.

[Statement by Senator Glenn from the Congressional Record and S. Con. Res. 96 follow:]

(From the Congressional Record, May 12, 1982)

NUCLEAR SUPPLIER EXPORT CONTROLS

Mr. GLENN. Mr. President, the first anniversary of Israel's sudden attack on Iraq's Osirak reactor outside Baghdad will be upon us in barely a few weeks, on June 7. I have no need to reiterate to my colleagues the deep concern which that attack provoked throughout the world not only with respect to a possible conflict in the Middle East, but also with respect to the terrible threat posed by the spread of nuclear weapons to additional nations.

As my colleagues will recall, the Senate Foreign Relations Committee held extensive hearings on the Israeli raid. While many opinions were voiced as to whether the raid was justified in view of the threat posed by Iraq's nuclear program, I think it is fair to say that one point became clear to all of us studying this problem. This was the fact that the international nonproliferation regime urgently needed to be strenghtened in a number of important respects. It became clear that supplier restraint in transferring sensitive nuclear technology capable of producing weapons-usable materials required much stricter enforcement and that loopholes in the list of covered technologies needed to be closed.

It also became clear that the safeguards and inspections implemented by the International Atomic Energy Agency required considerable upgrading and that their coverage needed to be expanded. Finally, it was evident that U.S. nonproliferation policy on international restrictions over dangerous nuclear trade had to be clarified and that early discussions with other nuclear supplier nations on these matters were vitally important. During the course of these hearings I submitted a resolution calling on the President to take immediate action to achieve these and other essential improvements in the international nonproliferation regime. That resolution, Senate Resolution 179 was agreed to without a dissenting vote on July 17, 1981, the same day as the House, also without dissenting vote agreed to a similar resolution, House Resolution 177, calling on the President to strengthen international barriers against the spread of nuclear weapons.

Mr. President, the timing of these actions by the House and by the Senate overwhelmingly urging the President to take firm action on the nonproliferation front in conjunction with other supplier nations was especially important. As the legislative history of these resolutions makes clear, it was the intent of both Houses to encourage the President in the strongest possible manner to bring up the question of enhanced nonproliferation controls with the other Western nuclear supplier countries at the Ottawa economic summit conference which began 2 days later on July 19. Surely, given the dramatic events of the previous month, there could hardly have been a more opportune occasion for seeking agreement among the parties involved on these matters.

To my deep regret, however, President Reagan and his counterparts apparently spent little time, if any, on this matter so vitally important to world peace. The most positive proof of the low priority that nonproliferation matters received can be seen from the text of the concluding communique of the conference: Nonproliferation is barely mentioned, and then only in paragraph 32 (out of 38) in the context of a joint statement about nuclear energy. The wording of this paragraph is instructive because it shows that nonproliferation was not even considered a matter of importance in its own right, but merely a subject of concern because it might adversely affect public attitudes toward nuclear energy use within the nations participating at the summit conference. Here is what the communique said:

(32) In most of our countries progress in constructing new nuclear facilities is slow. We intend in each of our countries to encourage greater public acceptance of nuclear energy, and respond to public concerns about safety, health, nuclear waste management, and nonproliferation. We will further our efforts in the development of advanced technologies, particularly in spent fuel management.

To think that the Israeli raid, which dominated the headlines for weeks and triggered overwhelmingly supported expressions of congressional concern over the need to strengthen the international nonproliferation regime should result in so meager a statement from the Ottawa Conference is appalling.

Mr. President, additional evidence has come to light recently which further demonstrates the low priority

that the Reagan administration gave to nonproliferation concerns at the Ottawa Summit. In recent testimony before the Senate Permanent Subcommittee on Investigations, it was revealed that at the summit meeting, the President discussed the export of sensitive technologies with our Allies. The focus of these discussions was not, however, the improvement of international proliferation controls, but rather the tightening of the rules on the transfer of technology to the Soviet Union. While this subject is, to be sure, an important one, the fact that secret high level meetings were held with the key suppliers on this issue, but not on the issue of nonproliferation controls constitutes a serious failure in the conduct of American foreign policy.

On June 4-6, 1982—literally on the eve of the anniversary of the Israeli raid—President Reagan will attend another summit conference with our major allies at Versailles. Once again, he will have the opportunity to raise at the highest level the urgent need to strengthen the barriers against the spread of nuclear weapons. I believe the Congress should go on record once again urging the President to undertake the negotiations in this field that are so badly needed. This is the purpose of the resolution that I am submitting today, and which is being submitted in the House by Congressman BINGHAM.

The resolution has two principal elements. First, it explicitly reaffirms Senate Resolution 179, so as to leave absolutely no doubt as to the Senate's strong views in this area. Second, the resolution identifies one specific recommendation from last year's resolution—that the President seek agreement among other supplier countries that nuclear exports will be made only to those nonnuclear-weapon states that have accepted full-scope safeguards—as a first objective in negotiations on nonproliferation that the President is called upon to initiate at the Versailles Summit meeting.

My resolution seeks to underscore the urgency of the problem and to provide the President with a discrete, crystallized negotiating issue for his upcoming meeting. Because my resolution is, thus, a reiteration of action previously taken by the Senate, I have every expectation that it will be promptly considered by the Senate Foreign Relations Committee and that a vote on the Senate floor will be possible well before the time of the Versailles Summit.

Besides reendorsing the importance of further limitations on transfers of sensitive nuclear equipment, materials, and technology, and improving the system of international safeguards, my resolution singles out gaining agreement with other supplier nations on establishing full-scope safeguards as an export criterion for several reasons. First, getting adherence to full-scope safeguards by nations around the world has been a long-standing objective of U.S. foreign policy and would directly address the proliferation risks in a number of key countries.

If all the suppliers could agree that these nations would receive nuclear technology only after they allowed international inspections on all of their nuclear facilities, the risk of these nations pursuing nuclear weapons programs through unsafeguarded, indigenously-built facilities could be greatly reduced. Second, gaining supplier acceptance for this export criterion is by no means a far-fetched objective. From time to time, there have been strong indications from a number of suppliers that they would accept this export criterion if it were universally adopted. Canada, the United States, and Australia have already made it a part of their nonproliferation control system, and at the 1980 Nonproliferation Treaty Review Conference additional supplier countries appeared favorably disposed toward this option.

Finally, as my resolution states explicitly in its preamble, gaining supplier country acceptance of full-scope safeguards as an export criterion is already a policy objective of the Reagan administration, as articulated last year in the President's policy statement on nuclear proliferation. Thus, my proposal is aimed at achieving widespread bipartisan congressional and Presidential support for this key objective.

III

97TH CONGRESS
2D SESSION

S. CON. RES. 96

Reaffirming Senate resolution (S. Res. 179) and House resolution (H. Res. 177) and urging the President to seek agreement at the Versailles Summit Conference that nuclear supplier nations should export nuclear fuel and equipment only to nations that permit full-scope safeguards.

IN THE SENATE OF THE UNITED STATES

MAY 12 (legislative day, MAY 11), 1982

Mr. GLENN submitted the following concurrent resolution; which was referred to the Committee on Foreign Relations

---

CONCURRENT RESOLUTION

Reaffirming Senate resolution (S. Res. 179) and House resolution (H. Res. 177) and urging the President to seek agreement at the Versailles Summit Conference that nuclear supplier nations should export nuclear fuel and equipment only to nations that permit full-scope safeguards.

Whereas the proliferation of nuclear weapons is a threat to the security of every nation in the world;

Whereas the International Atomic Energy Agency (IAEA) safeguards inspection system was created to verify that nuclear facilities in non-nuclear-weapon states are used strictly for peaceful purposes;

Whereas a number of non-nuclear-weapon states do not permit full-scope safeguards, that is, IAEA inspections of all their nuclear facilities;

Whereas only Canada, Australia, and the United States now require full-scope safeguards as a condition of exports of nuclear fuel and equipment;

Whereas certain other supplier nations have from time to time indicated that they would impose the same restrictions on their nuclear exports provided all other suppliers agree to take the same steps;

Whereas the United States has traditionally taken a leading role in developing agreement to control the spread of nuclear weapons;

Whereas on July 16, 1981, the President stated that the United States will continue "to seek agreement on requiring IAEA safeguards on all nuclear activities in a non-nuclear-weapon state as a condition for any significant new supply commitment";

Whereas on July 17, 1981, the Senate, without dissenting vote, passed S. Res. 179, calling on the President to implement a series of important initiatives to strengthen the international non-proliferation regime;

Whereas such initiatives are still needed, including consultations on an urgent basis with other nuclear supplier nations to limit nuclear transfers only to non-nuclear-weapon states which have accepted full-scope safeguards;

Whereas on July 17, 1981, the House of Representatives, without dissenting vote, passed H. Res. 177, calling on the President to take a number of significant steps to strengthen the political, institutional, and technical barriers against the spread of nuclear weapons; and

Whereas such steps are still needed, including the need to achieve restraint on the part of nuclear supplier nations: Now, therefore, be it

Resolved by the Senate (the House of Representatives concurring), That—

(1) the Senate and the House of Representatives, respectively, reaffirm S. Res. 179 and H. Res. 177; and

(2) the President, as an initial step toward implementing such resolutions, should urgently seek at the Versailles Economic Summit Conference and through other appropriate channels to obtain agreement from all nuclear supplier nations that they will export nuclear fuel, equipment, and technology only to those non-nuclear-weapon states that have accepted full-scope safeguards of the International Atomic Energy Agency.

Senator PERCY. Thank you, very much, Senator Glenn.

Again, I appreciate working with you through the years on both this committee and the Foreign Relations Committee. It is interesting that both committees now have to devote a large part of their time to this particular battle.

Secretary Kennedy, we welcome you warmly back to this committee.

TESTIMONY OF RICHARD T. KENNEDY, UNDER SECRETARY OF STATE FOR MANAGEMENT, DEPARTMENT OF STATE, ACCOMPANIED BY JAMES DEVINE, DEPUTY ASSISTANT SECRETARY, DEPARTMENT OF STATE

Mr. KENNEDY. Thank you, Mr. Chairman.

It is an opportunity as I see it, one which is appreciated, to appear before the committee and particularly before you and Senator Glenn, whose interest, whose concerns, which both of you have just stated, I share.

I can assure you that those concerns, those interests are shared by the administration. We see the problem very much in the same way. We see the potential for long-term proliferation of nuclear weapons in exactly the same way.

So as we see it, our task is to work together to find ways that those consequences do not come about.

Your letter of invitation to me identified a number of questions in which the committee has expressed interest.

I will, of course, address each of those in my statement. I have a somewhat longer statement than I would propose to make.

Senator PERCY. The entire statement will be incorporated in the record and the summary would be very much appreciated.

Mr. KENNEDY. I thought I could also profitably use the hearing to describe for you in outline the key elements of the administration's nonproliferation policy because I particularly am concerned that there is a feeling and I recognize it—we have discussed it before—that we are perhaps backsliding or at least downplaying, not giving emphasis where it should be. I assure you that that is not the case and I would hope that the hearing could elucidate why.

From the beginning of the nuclear age each administration has been firmly committed to the goal of preventing the spread of nuclear explosives. While the detailed policy approaches which have been taken have varied, the last eight Presidents have recognized the critical relationship between nonproliferation and our U.S. security interests. That recognition is at the core of President Reagan's policy.

Equally basic to our nonproliferation policy and to the nonproliferation regime itself is the administration's conviction that nuclear energy in the United States and around the world has a vital role to play over the next decades in providing environmentally safe and economically efficient power for home and industry.

Consistent with our nonproliferation objectives we are seeking ways to enable our nuclear industry to participate vigorously in those developments. Unless we play such a leadership role we may be less able to achieve the nonproliferation goals which we all share.

At the same time, with more and more nations embarking on civilian nuclear power programs it is essential that the United States and other countries adopt policies that insure that the legitimate development of nuclear power is not accompanied by the spread of nuclear explosives. We will not compromise—I emphasize this—we will not compromise our nonproliferation principles in pursuit of commercial gain and will continue to ask the same from others.

In matters of nonproliferation, just as in every other aspect of foreign policy, concrete distinctions sometimes have to be made among the various countries of the world. President Reagan has stated that the United States will not inhibit civil reprocessing and breeder development and I emphasize that as well—will not inhibit, that is different from encourage—in countries with advanced nuclear programs where that activity is not a proliferation race risk.

We think this is a realistic recognition that Japan and the Euratom countries believe that such advanced fuel cycle activities are needed for their energy security. However, we also recognize that plutonium and highly enriched uranium are dangerous materials whose use must be carefully controlled and safeguarded. To acknowledge that in certain cases use of plutonium is seen to be the sensible energy course is not to encourage reprocessing or advanced fuel cycle activities where they are not warranted as a coherent part of an advanced nuclear program.

Moreover, we believe that greater realism and flexibility in the exercise of U.S. consent rights is related to the degree to which other suppliers will be prepared to cooperate with us on important nonproliferation initiatives such as improving export controls, making export policies more uniform, and improving IAEA safeguards. And by working together with Japan and Euratom, we can best minimize the risks inherent in the presence and use of separated plutonium, whether in the area of physical security, of improved safeguards, or avoidance of unnecessary national stockpiling.

The administration also is committed to making it more difficult for countries to acquire the technical capability to build nuclear explosives. As President Reagan stated in his July 16 policy statement, the United States will seek to inhibit the spread of sensitive technology, facilities, and material, particularly where the danger of proliferation demands. But such measures can only buy time.

We must use such time wisely to reduce the motivations that may lead countries to seek a nuclear explosive capability. Steps need to be taken to alleviate the military and political insecurity of such countries. Ways also must be found to reduce mutual suspicion of neighboring countries, whether by encouraging adherence to the Treaty of Tlatelolco, adherence to the Non-Proliferation Treaty, or acceptance of full scope safeguards. Initiatives to improve regional and global stability are called for as well.

Efforts to strengthen IAEA safeguards are another essential element of our nonproliferation policy. Safeguards do not deal with all aspects of proliferation risk. Their purpose is to detect, and by the risk of such detection deter diversion, not prevent it. But it is critical that they do that defined task effectively. While the technical effectiveness of IAEA safeguards has improved steadily over the recent past, it still is more uneven than we wish. We are working both bilaterally in

cooperation with the IAEA Secretariat and multilaterally through a number of special projects to improve IAEA safeguards. Several of these efforts focus on the particular problem of safeguarding sensitive nuclear facilities.

For example, we are working closely with the IAEA to improve the quality and capabilities of its inspectorate. Through courses given at U.S. laboratories and by U.S. experts who go to Vienna solely for this purpose, IAEA inspectors are continuously trained in new techniques and methods designed to enhance the effective and timely application of IAEA safeguards. This effort has so impressed the IAEA that they formed first a training unit, and then a training section to train systematically new inspectors and to keep veteran inspectors up to date. We plan to continue and even modestly expand our training efforts, hopefully in conjunction with other interested IAEA member states.

Similarly, in the area of safeguards instrumentation we have developed explicitly for IAEA use over the past 5 years 20 types of equipment for verification of nuclear material. Some of the equipment is in routine use and much of it is in great demand by the inspectorate. We are considering ways to join with other countries in helping IAEA acquire and deploy this newly developed equipment. This should lead in the next few years to a significant increase in IAEA capabilities in measurement of uranium and plutonium by nondestructive techniques.

Further, through our program of Technical Assistance to IAEA Safeguards, 213 mutually agreed projects have been completed since its inception in 1977 and another 50 are currently under way at a total cost of $27 million.

The executive branch and NRC also actively recruit personnel to serve in Vienna as inspectors. We are currently examining ways of improving our procedures for recruitment to assure that only the highest quality personnel are recommended to the IAEA. And we are encouraging other IAEA member states to do the same.

We strongly believe that the IAEA is a special organization within the U.N. family. In its safeguards role, it provides a unique service upon which all member states depend and around which nearly all nuclear commerce is organized. Preservation of the Agency's effectiveness and credibility is an essential part of U.S. nonproliferation efforts and the Agency must be supported and improved. The President made that clear in his statement of July 16, 1981. The administration has supported, therefore, modest real growth in the IAEA's budget especially as it relates to safeguards. Coupled with modifications in IAEA recruitment procedures, this growth makes it possible for the IAEA to come closer to meeting its inspection goals.

Considerable concern has been raised recently about the technical task of safeguarding sensitive enrichment and reprocessing facilities. We recognize the problem, and are taking steps in cooperation with other countries to deal with it.

The United States is currently engaged in a multinational exercise to define effective safeguards approaches for gas centrifuge enrichment plants. In addition to the United States, Australia, Japan, the Urenco Governments—UK, FRG, Netherlands—and the safeguards inspectorates of Euratom and the IAEA participate in this project, called the Hexapartite Safeguards project.

11-269 0 - 83 - 2

All six countries now have, or plan to have, gas centrifuge enrichment facilities under IAEA safeguards. Much progress has been made. We expect that a recommendation for a preferred safeguards approach which should be adequate to the task will be made to the IAEA late this year.

We also are continuing our work on reprocessing plant safeguards. The Tokai Advanced Safeguards Technology Exercise [Tastex] was successfully concluded about 1 year ago. Since then instruments and techniques developed through Tastex are gaining acceptance internationally. Work on safeguards techniques also is being conducted at the Barnwell facility.

We are continuing our efforts to have the new techniques and equipment incorporated into IAEA safeguards approaches for reprocessing facilities. Continued work and cooperation on the part of interested countries and the IAEA will be needed to develop successfully adequate safeguards techniques and equipment for the larger reprocessing plants now in the planning stage.

Now let me turn to the specific issues raised in your letter of April 14 inviting my testimony, Mr. Chairman.

The first dealt with the management of our nonproliferation policy and the impact that certain personnel and organizational changes might have on its effectiveness. In my view, we have a very able team of people handling our nonproliferation policy, not only in the Department of State, but also in other parts of the executive branch including the National Security Council, the Arms Control and Disarmament Agency, the Department of Energy, and the Department of Defense. All are hard-working, dedicated professionals who are strongly committed to the objective of halting the spread of nuclear explosives.

The lead responsibility within the U.S. Government for managing our nonproliferation efforts rests with the Assistant Secretary of State for Oceans and International Environmental and Scientific Affairs [OES]. The present OES Assistant Secretary, James L. Malone, has been asked by the President and Secretary Haig to devote full time to matters relating to the law of the sea and U.S. oceans policy. Mr. Malone, who has served since March 1981, as the President's Special Representative for Law of the Sea, has been nominated as Ambassador at Large to perform these responsibilities. Mr. Malone has been and continues to be responsible for the law of the sea, oceans policy, nuclear nonproliferation and other subjects falling within the purview of the OES Bureau. He has done an excellent job in this capacity. The heavy demands related to oceans policy, now more than ever, simply make it good management sense to assign someone full time to that job. The candidates are now being evaluated to succeed Mr. Malone.

Each of the Under Secretaries of State has been asked by the Secretary to provide general policy guidance and oversight for certain specific areas of the Department's many activities. In addition to my general management area of responsibilities, the Secretary has asked also that I provide the broad policy guidance and oversight on his behalf over nonproliferation and safeguards matters. In that same connection, I serve as the U.S. representative to the International Atomic Energy Agency. I want to emphasize, however, that day-to-day supervision rests, as I indicated, with the Assistant Secretary for Oceans,

International Environmental and Scientific Affairs, and under him the Deputy Assistant Secretary of State for Nuclear Energy Affairs, Mr. James Devine, who is here with me at the table. In my policy guidance role I maintain close and regular contact with the Deputy Secretary of Energy and the Director of the Arms Control and Disarmament Agency. Messrs. Davis, Rostow, and I work closely together in assuring a coherent and consistent policy thrust across the executive branch.

Other agencies also play an important part and have been extremely helpful in defining our overall policy as well as in bringing their expertise to bear on its detailed implementation. The Department of Energy has a particularly crucial part to play in providing technical assistance to our negotiations and in exercising primary responsibility in handling exports of nuclear technology and in processing subsequent arrangements including such important areas as reprocessing and plutonium use.

The Department of Energy also plays a key role in providing technical expertise and assistance in the development and extension of effective safeguards systems equipment. Whatever the future role of DOE, I am assured that the important functions which that Department now exercises in the nonproliferation area will continue to be carried out in a coherent and effective way.

The Arms Control and Disarmament Agency [ACDA] plays an equally important part in our nonproliferation efforts. The initial development of our policy as well as its further implementation was closely coordinated with ACDA. On a day-to-day basis, the staff in ACDA provides critical expertise on issues ranging from improving IAEA safeguards, to export issues related to sensitive countries. The ACDA staff also has been of great importance in efforts to upgrade the existing nuclear suppliers' trigger lists, and senior policymakers in ACDA participate on a regular basis across the whole range of nonproliferation issues.

The Department of Defense participates fully in interagency deliberations on export licensing and subsequent arrangements, and is involved in major nonproliferation policy development. This is in keeping with the strong emphasis of this administration on nonproliferation as an element of our national security policy.

The chairman also requested the administration's views on whether new legislation is needed to control the activities of U.S. companies in their dealings with certain countries of proliferation concern. I believe you have in mind two specific cases, one involving South Africa, the other Pakistan.

U.S. companies did assist in arranging for the fueling of South Africa's Koeberg reactors, which I assume was one of the reasons for raising the question, acting as brokers for sellers of surplus enriched uranium in Europe and the South African buyers. The fuel then was provided to a French firm for fabrication under a longstanding contract. No U.S. origin material, equipment, or technology was involved. Any company, abroad or in the United States could provide such a service and such activity would not trigger supplier controls as would, for example, the export of fuel from one's own territory.

I do not believe that legislation either prohibiting brokerage functions or requiring special authorization to engage in such activities

is likely to prove very practical for several reasons. First, brokerage is so very common in the international uranium market that it would be nearly impossible to control this kind of activity in the absence of widespread cooperation among all countries involved in the nuclear trade. However, it is highly unlikely that other governments would be prepared to regulate brokering. Second, brokering natural and enriched uranium takes place so frequently and so quickly that any effort to control these activities would only overload the bureaucracy and divert its attention and resources from more critical nonproliferation matters.

Third, imposing special controls on firms dealing in brokering would unnecessarily hamper the smooth functioning of the international market, impose needless delays and costs on U.S. utilities and their foreign counterparts and undermine countries' confidence in the security of international nuclear supply. This could in turn set back our efforts to restore the U.S. position as a reliable partner in international nuclear trade, one of the basic tenets of the NNPA.

Thus, we would regard attempts at controlling these types of activity to be impractical and possibly damaging to our overall interest and we prefer to rely on diplomacy and other methods as more appropriate and far more likely to be effective.

The second case referred to by the chairman's letter concerns rumored negotiations between Pakistan and a foreign licensee of a U.S. company for the purchase of nuclear power reactor technology. First, let me say that we are not aware that any such negotiations have occurred. The letter states that such a transfer would constitute an "end run" of our nonproliferation policy. In this area of activities by foreign licensees of U.S. firms, however, we are not without legal tools.

Section 57B of the Atomic Energy Act provides authority for the control of nuclear technology exports by U.S. companies and for control over any retransfer of such technology by their licensees or other recipients of the technology. Current regulations on this subject are contained in part 810 of title 10 of the Code of Federal Regulations. Exports of sensitive nuclear technology are subject to stringent controls under sections 123, 127 and 128 of the Atomic Energy Act, and under the nuclear suppliers guidelines.

Activities not involving technology sensitive from the point of view of proliferation are generally authorized for the free world. Any activity by a foreign licensee or other entity of a U.S. company of sensitive nuclear technology would require specific Government approval. The export of reactor technology by a U.S. firm to a foreign licensee, which is specifically mentioned in your letter, is authorized to all but certain embargoed destinations—generally COCOM countries. In the latter case, specific authorization again is needed, before such nonsensitive technology can be exported.

We understand your concern that this general authorization might permit the export of reactor technology to a country of significant proliferation risk. We are working with the Department of Energy which administers these regulations to determine whether changes are warranted, for example, a change in the list of countries generally authorized to receive U.S. reactor technology. However, in thinking

about possible changes, it is important not to overlook the complexity of this matter.

Based on our longstanding general authorization for free world countries, companies in the United States have entered licensing arrangements with foreign firms. Reactor technology is now widely available in public literature worldwide. The impacts of any changes in the general authorization on U.S. firms and their licensees, and indeed I would say also on the countries with whom we maintain good relations, and whether significant nonproliferation benefits can be expected, must be reviewed before a decision is made whether or not to change the regulations. We also have to avoid creating new uncertainty abroad and being perceived as once again changing the rules of the game retroactively.

The DOE regulations can be changed by the executive branch, without the need for new legislation, and the general authorization can be revoked for particular countries or in particular cases. Finally, there also are more informal ways to make known our views in cases in which there may be an adverse nonproliferation impact of a given vendor's actions or those of its licensee.

Let me now turn more broadly to the administration's position on whether the Nuclear Non-Proliferation Act should be amended at the present time. I raise this partly because of the amendments to the NNPA that have recently been introduced in the House.

The White House fact sheet released on July 16, 1981, accompanying the President's statement, called for a review of the laws, regulations, and procedures in the nonproliferation area to determine whether changes should be sought. Such a review was conducted and a number of possible areas for modification in the law were identified in an interagency discussion paper. But subsequently, a consensus was reached to postpone consideration of changes to the law for the time being and the administration decided not to submit proposed legislation to change the NNPA.

In recent years there have been a number of major changes in U.S. law and policy—an enrichment contracting moratorium, President Ford's policy statements, President Carter's policy statements, and the NNPA. A further set of changes at this time, or even starting the legislative process on such changes would create a high degree of uncertainty both at home and abroad about the future content of U.S. nonproliferation law, procedures, and policy.

Once we open the Nuclear Non-Proliferation Act in all its complexity to amendments, it is not clear what the outcome would be. Such uncertainty could so undermine the U.S. role in international nuclear commerce that we would be unable to achieve our nonproliferation objectives. It also would hinder our efforts to reforge cooperative ties with the other major suppliers and to enhance nuclear rules of trade.

The administration shares the act's basic principles and is guided by them. Moreover, like us, foreign governments have come to understand the procedures that have been created and the system is beginning to function more and more efficiently. For all of these reasons, it seems prudent not to seek changes of the law at this time.

Your letter also asked what steps the administration has taken to carry out the suggestions expressed in Senate Resolution 179 of July 1981.

Let me note that I hope that my exposition will at least in some measure suggest, Senator Glenn, that we did in fact do something and indeed quite a little and continue to.

Among the various steps this resolution proposes is that the United States in cooperation with other suppliers tighten restrictions on nuclear trade by (a) placing a moratorium on transfers of sensitive technology to areas of considerable nonproliferation concern such as the Middle East and South Asia; (b) limiting the size of research reactors and eliminating the use of highly enriched uranium in such reactors; (c) extending the list of nuclear equipment and components whose exports should be made only subject to safeguards; (d) making nuclear exports conditional upon the acceptance of full scope safeguards by recipient states; and (e) imposing established sanctions in the event of a safeguards violation.

The President's statement of July 16, 1981, stated that the United States would continue to inhibit the transfer of sensitive nuclear equipment, materials, and technology, particularly where the danger of proliferation demands. We have made clear to other countries our concerns about the export of sensitive technologies such as enrichment and reprocessing, and we know of no plans by other nuclear suppliers to export such technologies to such volatile areas in the Middle East or South Asia. Other exporting states share our concerns about these two regions and are exercising great caution and restraint in their nuclear trade with these areas.

We also have taken the initiative in reducing or eliminating the need for highly enriched uranium in research reactor programs. The United States has had a program in effect for several years aimed at developing fuels for and making the necessary technical conversions to reduce the enrichment level of fuel in research reactors. This is called the reduced enrichment for research and test reactors [RERTR] program. Other nations have been strong and indeed enthusiastic supporters of this program. However, our objectives cannot be achieved through threats or precipitate actions such as cutting off exports of HEU. Instead, a sound technical program of development and demonstration is needed to convince other countries of the technical feasibility, safety, and licensability of reduced enrichment fuels along with the obvious nonproliferation benefits of converting to these fuels. If we continue to pursue this approach in the spirit of cooperation and assistance, I am confident that we will succeed in our efforts to reduce significantly or virtually eliminate the use of HEU in research reactors around the world.

We have been working very closely with the principal supplier states to assure that nuclear trade is subject to effective conditions and control. We have deliberately avoided highly visible steps such as a formal reconvening of the London suppliers group since we do not believe that this would contribute to our shared objective of further strengthening nuclear export controls. The London suppliers group has been characterized by developing countries as an effort by a cartel of advanced nuclear states to set unilaterally the rules of international nuclear trade, depriving developing countries of needed nuclear technology, and relegating the developing countries to a position of technological inferiority. Although such charges are groundless, other supplier states are particularly sensitive about avoiding any steps

which could be construed as a concerted action on the part of the principal exporting states. By contrast, quiet diplomacy and bilateral discussion are a more effective means of strengthening nonproliferation controls on nuclear exports.

In particular, a so-called trigger list was established by parties to the Treaty on the Nonproliferation of Nuclear Explosives [NPT] in order to carry out their obligations under article III of the treaty. The London suppliers guidelines established an expanded trigger list to include exports of sensitive nuclear technology. These lists have been generally effective in assuring that significant nuclear exports are not being made to unsafeguarded programs.

However, many items on the list are quite general and there is a need to clarify and make more precise what particular equipment belongs on these lists. Moreover, certain dual use items which do not fall on any list should be subject to export controls to assure that they only go to safeguarded nuclear facilities. We have taken important initiatives on both these fronts.

Another area in which we have taken action is promoting more widespread acceptance of full-scope safeguards. The Nuclear Non-Proliferation Act requires that nonnuclear weapons states have all their peaceful nuclear facilities under IAEA safeguards as a condition of U.S. nuclear exports. In addition, the President's nonproliferation message of last July stated that we would continue to urge other suppliers to require full-scope safeguards as a condition of any significant new supply. Though several other nuclear exporters are reluctant to adopt a full-scope safeguards requirement for their exports until all nuclear suppliers do the same, we have been stressing the importance of full-scope safeguards to the nonproliferation regime to all countries. This is a difficult and challenging area; but we are hopeful of progress and will continue to use our diplomatic resources to gain wider acceptance of this critical nonproliferation norm.

Finally, President Reagan's July 16 nonproliferation statement made clear that:

> The United States will view a material violation of (the Treaty of Tlatelolco or the NPT) or an international safeguards agreement as having profound consequences for international order and United States bilateral relations, and also view any nuclear explosion by a non-nuclear-weapon state with grave concern.

It is not feasible or desirable, however, to establish in the abstract a precise and complete set of sanctions which the United States and other countries would impose in the event of a violation, Commonsense suggests that the U.S. response would have to be tailored to our particular relationship with the country in question. Nevertheless, it is important that we and other countries make clear that our bilateral relations would be adversely affected in the event of such proliferation actions. We have done so and will continue to do so.

Thus, consistent with Senate Resolution 179, this administration clearly has taken the initiative on a number of fronts to strengthen the international nonproliferation regime. This sometimes is overlooked because little publicity has been given to these efforts. But we believe that the quiet diplomatic steps and measured technical approach we have taken have the best chance of improving nuclear export controls, expanding safeguards coverage, and winning widespread

acceptance for reduced enrichment fuels. And these steps are but part of the overall nonproliferation effort I described earlier.

Senate Resolution 179 also called for a prompt reevaluation of world nuclear energy policy, culminating in a conference to agree upon ways both to reduce security concerns and strengthen the nonproliferation regime. The United States is involved in a number of international gatherings addressing questions of this nature. One is the Committee on Assurance of Supply [CAS] which is taking place under the auspices of the IAEA. The United States is an active participant in this effort which has been established to define ways to improve security of nuclear supply while assuring that international nuclear trade is fully consistent with the need to prevent the spread of nuclear weapons. In addition, a Conference on the Peaceful Uses of Nuclear Energy [PUNE] is now being planned for August of 1983 under the auspices of the United Nations. Two preparatory conferences have already been held to lay the groundwork for the plenary meeting next year. The agenda for this Conference is likely to be a wide-ranging one. Such conferences carry certain risks and we must be alert to assure that they do not result in any weakening of international nonproliferation norms. For that reason the United States intends to participate actively and constructively in conferences like PUNE.

In his July 16, 1981, nonproliferation policy statement, President Reagan emphasized that "Further proliferation would pose a severe threat to international peace, regional and global stability, and the security interests of the United States and other countries." President Reagan then reaffirmed this administration's commitment to the longstanding bipartisan goal of preventing the spread of nuclear explosives to other countries, a goal also shared by the vast majority of the world's nations.

To realize this goal, we have been pursuing many of the specific recommendations contained in Senate Resolution 179. Thus, this administration's fundamental commitment to the underlying goal of nuclear nonproliferation and to strengthening the global nonproliferation regime is clear; its readiness to work to that end is attested to by actions, many of which I have described today.

But if we are to realize our shared nonproliferation goals, we also need, Mr. Chairman, to restore and nurture that basic spirit of bipartisan cooperation to which President Reagan referred. Rather than engaging in contentious disputes, the executive branch and the Congress must work together. To that end, I reaffirm our readiness to consult closely with you on the critical issues and choices that lie ahead.

Cooperation also is needed between the branches of Government and the nuclear industry. We in the executive branch and you in the Congress need to take account of the legitimate concerns of the nuclear industry as well as to make use of its readiness to contribute to realizing our common nonproliferation goals, particularly in strengthening safeguards. But for its part the nuclear industry must work, as does this administration, within the spirit as well as the letter of existing nuclear legislation.

Above all, a spirit of restored cooperation in the nuclear realm is required with other countries. A unilateral approach which too readily overlooks the particular energy needs, security perspectives, and domestic political requirements of other countries makes our common task

more difficult. We cannot dictate to other countries; we must convince them of the desirability and benefits of cooperating with us to insure that the peaceful use of nuclear energy does not lead to further nuclear explosives proliferation. For here too, failure to work together can only lead to a broader failure of our nonproliferation policies.

Thank you, Mr. Chairman, and I welcome the committee's questions.

Senator PERCY. Thank you, Mr. Secretary.

Speaking on behalf of both Senator Glenn and I, we put the question to you, should the Non-Proliferation Act have any changes made in it to strengthen and improve it? We thought at the time we introduced the act and adopted it after a good deal of negotiation with both the Ford and Carter administration, that it certainly could be improved on.

We felt time was running out, we ought to get it into law at that time.

Now, some 4 years after its implementation, do you feel it cannot be improved or no changes at least should be made? That is reassuring, but on the other hand, we don't think it is working as we had hoped it would. So we will continue to scrutinize it. We do appreciate your putting time into it.

Just one question. I may come back to it later on, with Mr. Malone. He is up for confirmation as Ambassador at Large, this afternoon. We have been doing at the request of some of the Senators on our committee a good deal of study of his present responsibilities, how he has executed those, carried them out, and his role as an administrator and decisionmaker. We have a large body of evidence built up now by our very thorough staff.

You indicate on page 9 that the day-to-day supervision rests with the Assistant Secretary for Oceans and International Environment and Scientific Affairs and you have oversight over that. Mr. Malone has been relieved of those responsibilities and is concentrating entirely on the responsibilities assigned to him as Special Representative for the Law of the Sea and Ocean Policy. How long has nuclear nonproliferation not been under his direct supervision?

Mr. KENNEDY. It remains under his direct supervision.

Senator PERCY. He is not spending any time on it?

Mr. KENNEDY. He simply hasn't been able to while he has been in New York on the Law of the Sea.

His principal Deputy, Mr. Marshall, and as I indicated to you the newly appointed Deputy Assistant Secretary, Mr. Devine, have undertaken this.

The entire Office, the Nuclear Office in the OES Bureau has been substantially strengthened over the last 3 or 4 months with the accession of a number of extremely qualified people under Mr. Devine's leadership.

We believe now that that organization is in place and is working well.

Senator PERCY. As a manager, do you gratuitously offer the statement that he has done an excellent job in this capacity; that is, responsibility for the law of the sea, oceans policy, nuclear nonproliferation and other sectors falling within the purview of the OES Bureau. He has done an excellent job in this capacity.

Do you stand on that statement in every respect?

Mr. KENNEDY. That is our overall judgment.

Senator PERCY. A superb administrator, superb manager, he is in command of details, he follows up, he has the loyalty of his employees? Do you stand on that statement? That is what I say, if he is doing an excellent job, he must command the loyalty, the devotion of his people for whom he is responsible. They must see that he is doing a good job. Do you stand on that?

Mr. KENNEDY. I certainly do, Senator.

Senator PERCY. To the best of your knowledge?

Mr. KENNEDY. Yes, sir.

Senator PERCY. Because we have had such attention devoted in recent months to the South Atlantic and this dispute over sovereignty that has turned violent, I would like to ask you how the crisis would be different if Argentina actually had nuclear weapons in its arsenal?

Mr. KENNEDY. That is speculation and tends to raise the hair on the back of my neck, Mr. Chairman. Clearly, it would add a dimension to the crisis which does not now exist, a dimension which, if one were to assume a measure of irresponsibility on the part of any of the parties involved as to the use of such devices, could be a serious dimension indeed; one which—the use of weapons in such a circumstance—could have consequences I think that we simply do not necessarily comprehend. I am not sure, and I think in due time there will be more analysis of just what that might mean. Obviously we would hope a review in a theoretical sense, but surely it adds a dimension which none of us would want to see.

Senator PERCY. When you have a government that literally cannot make a decision, where you have 40, 45 power structures down there, Secretary Haig can get agreement from the top dozen, let's say, and yet after 2 days of negotiating, he finally gets agreement and something happens on the way to the airport and the Foreign Minister has to rush out to the airport to say, "Everything we have agreed to is now disagreed to because we can't get the corps commanders or we can't get the division commanders agreed." If they did have nuclear weapons and they know that the junta would fall unless they make their point, the possibility that someone could decide to use them would just be so horrendous and so possible. In this case, emotions are so heated with mobs outside of those buildings putting pressure on the government—Secretary Haig's shuttle diplomacy had gone just as far as it could, how could you have a clear decision down there with the emotions? That emotion is what frightens us and at the very least it would complicate the situation tremendously and make it potentially far worse. So again I come back to the fact that even though the law is not as perfect as we would like it, not working as well as we would like it, this area of policy that could prevent other countries, nonnuclear powers from joining the club, should be a matter of the highest conceivable priority.

That is the question that Senator Glenn and I constantly raise. Is it as high a priority in your judgment with the administration as the circumstances really warrant?

Mr. KENNEDY. Senator, there is no question in my mind that the administration considers the nonproliferation question and issue a matter of paramount concern and interest; no question whatever.

As I tried to suggest in my remarks, maybe by pursuing the issue as we have with quiet diplomacy, we have not reached the consciousness of the body politic as a general proposition in the ways that we might. And it seems to me perhaps what is called for here—and I have thought about this a good deal, and am speaking only in this instance as Dick Kennedy—I think perhaps what we need is a little bit more frequent presentation of our concerns on the one hand and the steps and interests which we are pursuing on the other. This could achieve a broader understanding of both the nature of our concern and the depth of that concern, and the steps that we would propose to take and are pursuing.

I would add again that we believe strongly that success will depend upon a cooperative spirit in approaching our friends abroad who we must persuade to look at the issue in essentially the same way that we do. And the way to get that kind of cooperation, we believe, is by quiet diplomacy. Neither, if you will, strong arm twisting or public cajoling is going to get us there. It scares them off. It has done so over the last several years and will continue to do so. We believe that the quiet diplomacy route is yielding fruit. We are getting—I know for a fact myself in talking with leaders in a number of countries and at the IAEA when the Board meets—a much closer joining of views than some public statements might suggest.

I have tried to suggest in my statement at least some of the reason for that. They see themselves in respect to other countries in the world and they have to keep that in mind. But as to their intentions, their purposes, we are very much on the same track.

Senator PERCY. I have always been more concerned about the possibility of our being brought into a nuclear exchange because of the actions of third parties. I am deeply concerned about the Near East, a highly volatile area, the conventional weaponry, the casualties in the wars and the bitter hatred between people down there. The Near East is bad, but the Middle East is just as bad, if not worse. You have got volatile situations like Iraq, Syria, and certainly Qaddafi in Libya with the resources and the desire. It's unpredictable. You said in your statement on page 15 that you know of no plans by other nuclear suppliers to export sensitive technologies to such volatile areas as the Middle East or South Asia.

What about South America? What about South Africa? What about the Near East itself?

Could you report on that?

Mr. KENNEDY. My impression is that while there are always in all of those areas suggestions of additional nuclear commerce, generally leading to at least power reactor sales, that in every case the need for essential safeguards is being recognized and with greater stringency on the part of each of the potential suppliers than has been hitherto the case.

Senator PERCY. My last question at this time, Secretary Kennedy, will deal with the Congressional Research Service report on the Argentine nuclear program that I am releasing today.[1] It concludes that Argentina could have a nuclear explosive within 2 to 5 years. Do you generally agree with that assessment?

[1] See p. 137.

Mr. KENNEDY. I haven't seen the report, Senator, so I can't comment in any informed way; on the report, that is. But let me say that there seems little doubt that Argentina has been pursuing and continues to pursue a broad-ranging program of nuclear development which is aimed at a complete self-contained full fuel cycle.

That is not to say that such pursuit is necessarily indicative of a weapon program. I think we have no way to make that judgment in any conclusive way. I would not be surprised if the report came to a conclusion of that kind, but the possibility is one thing; intention to do so, intentional movement in that direction, is quite another, and the latter, of course, is far more serious.

Senator PERCY. If you haven't seen the report, let me just indicate, and I will give you a copy today, Argentina has carefully reserved the right to set off peaceful nuclear explosives. I do not know what uses there are for peaceful nuclear explosives in Argentina. Perhaps they are going to dig a canal across the Andes, but from my standpoint, there is little difference between a military nuclear explosion and a so-called peaceful one.

I said that to Mrs. Gandhi. I just happened to be in the Near East just after they exploded their device, and I said to her, you are going to rue the day you have done this, because you have now provided the incentive for every military person in Pakistan to drive forward to get their own, and once they get their own, if they do get it, you put them on an equal basis, a bomb is a bomb; all your superiority in conventional weaponry is down the drain. They will have the same power that you have in this ultimate weapon.

I do not see much difference in a peaceful military explosion and a military explosion.

Do you see any difference?

Mr. KENNEDY. Senator, I have never thought there was any important difference. But let me, if I may, I think I have made that point on the record many times, sometimes I think before this committee. That is the way this Government looks at it. We do not distinguish. But on the other hand, I think in fairness one has to recall that like it or not, we were the inventors of the peaceful nuclear explosion back in the very early days of the atoms for peace program. We did have our plowshare program. We experimented with using the explosive power of these devices to do deep mining, to construct canals, to dig deep cavities and all of these things. Indeed there is more than one country in the world interested in peaceful nuclear explosives, and the Soviet Union is pursuing programs of that kind. Though I think, unfortunately, there is a distinction made in some of the literature between the so-called peaceful and other explosions.

I say that only in fairness, but it is correct, certainly correct, that we do not think a peaceful nuclear explosion is different from one not so peaceful. We do not make that distinction now when we discuss the question. We make it clear that a nuclear explosive device is a nuclear explosive device, no matter what one calls it.

Senator PERCY. The final phase of this question deals with the part of the report detailing some of the foreign cooperation with Argentina, even though it has not signed the Non-proliferation Treaty and says it may set off nuclear explosions.

West Germany, Canada, Switzerland, France, and the Soviet Union are all listed as supplying nuclear facilities and technology to a nation that has stayed outside the international consensus of the Nuclear Non-Proliferation Treaty and Safeguards. It is interesting that some of these nations which are cooperating with the Argentine nuclear program are the same ones that have adopted sanctions over the Falkland Island issue.

How has this happened, and what is the United States doing about it? What can we do about this matter?

Mr. KENNEDY. Let's address what is happening first.

I think there is a closer scrutiny being given all sorts of nuclear exports to Argentina on the part of all suppliers than once was the case. And there is a continuing interest on the part of all suppliers so far as I am aware, to assure that appropriate safeguards are associated with whatever material or equipment each supplier is proposing to deliver. That is one thing.

The second thing, the second question is, what can we do about it? Beyond what we are continually doing, as I indicated earlier, expressing to every potential supplier our own interest in assuring full-scope safeguards and pursuing that as a basic tenet of nuclear export policy, it seems to me not very much. That is a fact of life. We, as I indicated, must continue to press as we do everyday with all suppliers to try to get a comprehensive agreement and understanding that full scope safeguards is the only sensible way to go.

Senator PERCY. Thank you, very much.

Senator Glenn?

Senator GLENN. Thank you, Mr. Chairman.

The chairman started out on Mr. Malone. I have a couple of questions about Mr. Malone also.

In the Indian paper, the Hindu, published in English on March 9, 1982, an article by Ram, entitled, "Possibility of Compromise on Tarapur Fuel Seen," contains the following statement:

> These postures were reiterated in the third round of talks in Washington in November 1981. However, the U.S. side came up with a new twist on the eve of the round.
>
> Mr. Malone, the former nuclear broker, played—outside the official talks and privately to Mr. Gonsalves—upon the possibility that the United States might be able to get someone within the European suppliers group to send fresh fuel for Tarapur within the control framework of the 1963 agreement.
>
> Although there were earlier recommendations from Mr. Malone that India considered the Soviet Union as an alternative supplier, the supplier really favored by Washington seemed to be France.

Do you know anything about Mr. Malone recommending to India that they perhaps consider the Soviet Union as their nuclear fuel supplier?

Mr. KENNEDY. I have not—first I am not familiar with the article. I have no idea who he is, what he is writing about. I do not know of any specific conversation of this kind.

I can tell you that we have, as I think I mentioned in the last hearing by this committee, in which this sort of question was raised, we have been conducting a number of conversations with India in an effort to find a way through Tarapur.

There is the question of whether that agreement is or is not to be terminated and if terminated, under what conditions. We must remem-

ber our long-term interest must be that, whatever the case, safeguards continue as the agreement now calls for.

So we have been discussing with the Indians ways in which that might be brought about. I would also note in that connection, and I don't think I should go very much farther in an open hearing about the nature of those discussions, I would be glad to discuss them with you privately.

I would also say that what had been thought to be an imminent supply break on this question has not occurred and those discussions are continuing with an intent, I think, on both sides to find a way in which the concerns that we have will ultimately be satisfied.

That is our judgment.

Senator GLENN. Obviously, we will want to ask more questions about this when Mr. Malone comes up before the Foreign Relations Committee this afternoon. That is one of the reasons I bring it up this morning. We may have our own State Department suggesting that India go to the Soviet Union as a supplier for their nuclear fuel needs.

Mr. KENNEDY. I think that—well, I simply don't know where that story comes from. Until I can find out, I wouldn't want to comment further.

Senator GLENN. I presume it came from Mr. Gonsalves, who is the Secretary of the External Affairs Ministry in India. He is the one quoted here earlier and then the article states that this comment was made outside the official talks, in private, to Mr. Gonsalves, that is, that India considers the Soviet Union as an alternate supplier.

Mr. KENNEDY. I cannot comment.

Senator GLENN. We will ask Mr. Malone directly about that. A couple of paragraphs later the article says this has been strengthened by subsequent statements and indications in New Delhi and also by the recent observations by the U.S. Ambassador to India, Mr. Harry Barnes, to the effect that India and the United States are making efforts to narrow down their differences on the supply of nuclear fuel for Tarapur.

Since there seems no question of resuming the American fuel supply, this can only mean that the United States is involved in brokering or negotiating in some way a fuel supply relationship for India with another external source. Is that being done?

Mr. KENNEDY. No, sir.

Senator GLENN. Because if it was, that would mean we are deliberately using our own State Department's efforts and our Ambassador there to bypass the intent of the Nuclear Non-Proliferation Act.

Mr. KENNEDY. We are not brokering in such a way.

Senator GLENN. Have we made any suggestions to India as to other fuel suppliers that they might go to?

Mr. KENNEDY. I simply don't know the answer to that, Senator. But I will be glad to find out and indicate it to you.

Senator GLENN. I think it is very important. The NNPA was set up with the objective that you are very much familiar with, prohibiting nuclear fuel exports to countries that will not accept full-scope safeguards, and if we are deliberately using out negotiating posture with some of these countries to deliberately bypass the act, it seems to me that is an intent to thwart our own law.

Mr. KENNEDY. Senator, I can assure you that nobody is attempting to thwart or bypass the law. I can, however, reassert that our objective vis-a-vis India is a long-term arrangement which will protect the interests which we believe—well, which the NNPA clearly enjoins us to protect.

Senator GLENN. If something like this had happened, if Mr. Malone is suggesting alternatives like this or if our Ambassador is making these suggestions as was indicated here, is this something that would be under your jurisdiction?

Mr. KENNEDY. Generally, yes, sir.

Let me again offer to you a full briefing on precisely what has been done and where we stand.

Senator GLENN. All right.

Mr. KENNEDY. It should be done, I believe, in closed session.

Senator GLENN. Is the President going to bring up these matters at Versailles this year?

Mr. KENNEDY. It has been suggested he do so.

Senator GLENN. Has he accepted that?

Mr. KENNEDY. He has not completed his preparations.

Senator GLENN. As far as you know, you don't know whether he is or is not planning to bring up this matter of nuclear nonproliferation?

Mr. KENNEDY. Until he decides, I cannot answer that question. The only thing I can say is it has been proposed that he do so. In any event, let me add, Senator, I am confident that the subject will be raised in some context in the series of those meetings, whether by the President, I cannot say.

Senator GLENN. I share the chairman's concern about this business of keeping attention on nonproliferation and keeping the importance of this before us, before the administration, because I have not had the feeling that there was the same kind of concern within the administration that we have at this end of the avenue.

Last year, as I said in my opening statement, we passed Senate Resolution 179. It passed on a record rollcall vote in the Senate 88 to nothing, asking the President to bring this up with the nuclear supplier nations, some of whom were represented at Ottawa.

That meeting was on July 18 and 21. On July 16, the President put out his nuclear policy statement calling for the United States to work with other suppliers on nonproliferation to gain broader acceptance of full-scope safeguards and I had hoped that something would come out of Ottawa.

What came out of Ottawa was in item 32 of the final communique of that conference. This is the only mention of nonproliferation out of the whole Ottawa summit that I am aware of.

It says,

> In most of our countries, progress in constructing new nuclear facilities is slow. We intend in each of our countries to encourage greater public acceptance of nuclear energy and respond to public concerns about safety, health, nuclear waste management, and nonproliferation. We will further our efforts in the development of advanced technologies, particularly in spent-fuel management.

After the Senate's evidence of such a strong interest on this matter, after the President's own statements, it is distressing indeed that all that came out of the Ottawa meeting was a sentence that says, "And

nonproliferation," and that this was the extent of the interest shown last year at the Ottawa summit on nonproliferation matters.

I am certainly hopeful that this year there can be a bit more than that. I hope this becomes a matter of major concern at this year's summit.

I think we missed a golden opportunity last year. That summit came right on the heels of the Baghdad raid when world attention was focused on this.

I think the President missed a great chance for leadership in this area that might have forestalled some of the people in the streets this spring to whom this has become a very personal matter for their concern, for them, their children, what is going to happen in this nuclear race.

I would certainly encourage that to happen.

Let me go to Argentina.

Did you see the BBC documentary?

Mr. KENNEDY. No; I did not. I heard some accounts of it.

Senator GLENN. We have a copy of it and we have shown it here. I looked at it the other day. Although you cannot draw a positive conclusion from it, the circumstantial web of evidence is rather convincing as to what is going on in Argentina. It is causing great consternation in England. I can tell you that. I discussed it with some of the Foreign Ministry officials in London just last weekend and they filled me in on some of the details of the concern it had caused in England and in West Germany, which comes under very heavy fire in the film for its activities relating to Argentina's nuclear program and for the role played by German expatriates that seem to be involved.

There is a major reprocessing plant being built, being finished right now in Argentina. They have no real need for a reprocessing plant of that size.

Do you have any indication that Argentina is actually beginning a sales program involving transfers of technology for the full nuclear fuel cycle? Do they want to become a major world supplier in that area?

What do we know about that?

Mr. KENNEDY. I think they do believe that they will, along with Brazil, take a major position in the nuclear industries of the world. As to their full fuel cycle they have, I think unabashedly from the very beginning of the program made clear that they intended to develop a self-contained nuclear industry with a full fuel cycle.

It is not an unreasonable belief on their part that their own energy self-sufficiency demands something of this order. That is the course on which they have been since the beginning.

Senator GLENN. There is an article published in the Wall Street Journal, April 29, suggesting that part of the concern over the Argentine nuclear program is that, according to several government sources, there have been large gaps in the monitoring and accounting of the nuclear fuel being delivered to and removed from Atucha I, Argentina's commercial power reactor near Buenos Aires. Do you know whether there is any truth to that report or not?

Mr. KENNEDY. There have been a number of allegations over the years and suggestions that there have been some anomalies and indeed evidence suggests that there have been some anomalies. This has been looked at by the International Atomic Energy Agency on several occa-

sions. So far as I am aware there has been no conclusion on the part of those inspectors that any potential diversion has occurred.

Senator GLENN. Do we have export licenses for Argentina pending at this time?

Mr. DEVINE. Yes. We have several, Senator, both for fuel and components.

Senator GLENN. What is the status of those? Is there a deadline? What are they for? Are there quite a number?

Mr. DEVINE. There are quite a number. We can provide it. But essentially there is long-standing application for highly enriched uranium for their research reactor, more recent ones involve zircalloy tubes and other components. No action is being taken on them at the present time.

Senator GLENN. Is that being held up intentionally because of the conflict down there?

What will be the time period that that would normally be approved or disapproved?

Mr. DEVINE. Normally the component applications would have been approved within a matter of a month or two. But they have been held up for some time.

Senator GLENN. Is that because of the conflict there?

Mr. DEVINE. No.

Senator GLENN. Because of other concerns about Argentina?

Mr. DEVINE. General concerns about their——

Senator GLENN. Weapons intent?

Mr. DEVINE. No. I wouldn't say weapons intent, but until we get a clearer picture of where their program is going.

Mr. KENNEDY. And an indication of their willingness to discuss appropriate safeguards arrangements with us.

Senator GLENN. Concerned about where the program is going, it says it in other words, I guess. That is like calling a tax increase revenue enhancement, I guess.

What can you tell us about China getting into the nuclear export market in a serious way? There are indications that they want to export all facets of the nuclear fuel cycle and make this part of their international trade. Apparently the Chinese have not been bound by anybody else's views on restrictions or in any way hampered in what they want to do in this field. What do we see developing in that program?

Mr. KENNEDY. I think it is very clear that the Chinese have a substantial nuclear program. That has been the case for a very long time. As to their activities in the world market, it has up to now been principally concentrated on such matters as heavy water and enriched uranium.

We have suggested on a number of occasions to the Chinese the necessity for their taking a good, hard look at the way they are doing this business and trying to get them to see the need for safeguards.

Senator GLENN. Did Vice President Bush bring this up during his visit to China?

Mr. KENNEDY. I am not sure. I don't know.

Senator GLENN. Was it suggested that he bring up these matters while he was in China?

11-269 O - 83 - 3

Mr. KENNEDY. Yes. We did have talking points. I don't know whether the question was raised.

Senator GLENN. In a Japanese paper on February 27, there was a story that the Chinese sought the help of several Japanese firms in exporting enriched uranium, heavy water, and other nuclear materials. Do you have any information that the Chinese are sending nuclear materials to various countries now?

Mr. KENNEDY. The Chinese—in fact, I think it is reasonably well known—have made some exports but to go into specific cases, Senator, it should be done in a closed session.

Senator GLENN. You would rather not comment on whether those shipments have gone?

Mr. KENNEDY. I would rather not.

Senator GLENN. In that same story, it states the Chinese attempted through a major Japanese trading company to export heavy water to India and Pakistan, but that intervention from the United States prevented the deal from going through.

Is that true?

Mr. KENNEDY. Again, I would rather discuss that in closed session. I will be glad—let me assure you that on these questions I will provide the answers.

Senator GLENN. Fine. I am sure your answer to this would be the same and I understand. But I would like to have information classified for the record also, information concerning the report that the Chinese have sent uranium to South Africa or heavy water to Argentina, or both, and any comments you might have in a classified way in those areas, also.

We have all read the reports regarding the difficulties with the safeguards of the Kanupp reactor in Pakistan. It is my understanding that because of the camera failures, blockage of camera lenses, and poor resolution, in essence there was no camera surveillance of the Kanupp reactor for a period of about 8 months. Is that accurate?

Mr. KENNEDY. I am not aware that there was any judgment of that kind made. There clearly were a number of failures of cameras but there were a variety of coverages and there were a number of inspections that took place. Some of them may well have occurred in that period. I would have to check that.

In any event, let me say that there were difficulties with some of the surveillance methods. That was understood. The IAEA has undertaken major steps and efforts to correct that. I am pleased to be able to say that, however slowly this has been occurring, the Government of Pakistan has been moving to cooperate more fully with the IAEA in improving those safeguard techniques at Kanupp.

Senator GLENN. On a slightly different subject, I would like to ask a series of things about Pakistan's continuing activities to receive the materials to build a nuclear weapons device program.

The New York Times on November 20 last year had a story that Federal authorities seized some 5,000 pounds of zirconium, metal used in a number of nuclear applications at Kennedy Airport in New York, where they had been checked in as baggage, labeled as mountain climbing equipment.

Mr. KENNEDY. It must be a very small mountain.

Senator GLENN. 5,000 pounds of it is something that is hard to believe being shipped through as baggage at New York. It is not good to joke about it. But the metal was awaiting shipment by a Pakistan airline.

We had already heard previously about components being shipped by a firm in California that ended up in Pakistan; this episode involved numerous electronic components from the United States being shipped for use in Pakistan's nuclear enrichment program. More recently, we see in the Kennedy Airport episode that Pakistan is still attempting to obtain American-made material for its nuclear program. It is my understanding that Pakistan also attempted to buy a PD–11 computer from the Digital Equipment Corp. in 1980 and again in 1981 and that when it became apparent that no export license for the shipment of such computer would be issued by the Commerce Department, the Pakistanis were able to purchase the computer from a small British firm which was a U.S. licensee for export of those machines.

The computer supposedly has been installed where the Pakistanis' nuclear enrichment plant is being built. It is my understanding also the British firm offered to train Pakistanis in the United States in the use of the computer through the cooperation between a Pakistani and an American university. Finally, the capability of this computer is such as to allow it to be used for such things as nuclear weapons design.

Can you tell me whether this report is correct and whether we have additional evidence of the Pakistanis trying to get around U.S. export restrictions by buying U.S. designed technical equipment abroad?

Mr. KENNEDY. I may provide a detailed answer for the record.

Senator GLENN. Fine. Do you have evidence that they have tried to get around without giving out any classified details?

Mr. KENNEDY. There have been occasions in which they have tried to do this. I am not familiar with the specifics of this computer, there have been times——

Senator GLENN. Where they have tried to bypass our export restrictions?

Mr. KENNEDY. Yes.

Senator GLENN. Thank you, Mr. Chairman, very much.

Thank you, Mr. Kennedy.

Mr. KENNEDY. Thank you, Senator.

Senator PERCY. Thank you, Senator Glenn.

Mr. Kennedy, I would like to talk a little bit about South Africa. Is it true that the type of nuclear research that South Africa is planning is so expensive that U.S. companies cannot afford it on their own? Are they going into a research program very extensively?

Mr. KENNEDY. I wouldn't make that kind of a judgment. They are involved in substantial research in the nuclear field, in the nuclear energy field.

Senator PERCY. What I can't figure out is why a country such as South Africa would want to do this kind of research alone, when for apparently considerably less money, as little as one-fiftieth as much, according to one estimate, they could get the same information from countries like Sweden, which has already done the research. Have we looked to determine the motivation for their decision to do all their own research?

Mr. KENNEDY. I don't think we have made an estimate as to why they would want to do the research and I don't mean this facetiously, scientists typically, I have found over the recent years, tend to like to do research on their own even though there is data which they could use which others have developed. A lot of that may be the case. But in addition to that, they clearly are engaged in a substantial research program and I suspect will keep to themselves. They are looking at developments across the range of the fuel cycle that they are engaged in.

Senator PERCY. I ask the question because I have long argued that the United States should not punish its domestic nuclear energy by unilaterally restricting exports of its own products while other suppliers show no restraint.

On the other hand, we can hardly expect other nations to take the lead on nonproliferation controls if we don't set some kind of example at home. We must try over an extended period to gain international acceptance of some rules of international nuclear trade.

I just hope we're not giving up too soon on this effort. I know it is a tough one. When we passed the Nuclear Non-Proliferation Act in 1978, we said at the time that we didn't expect the world to change overnight. At least we were in a position to use our influence and we should try to use it to bring about a program of nonproliferation.

We know that there has been some friction with customers and other nuclear suppliers and we certainly have to keep at it because the consequences of failure are just too large as we have already talked about earlier today.

One particular export has been a matter of concern. I understand the administration has now under consideration a license to export a substantial quantity of helium-3, a byproduct of the U.S. nuclear weapons program, to South Africa.

The U.S. commodity control list, the Commerce Department's listing of sensitive exports, says helium-3 "is used in the nuclear weapons program and when reconverted to tritium has added significance in strategic applications."

You can learn easily that tritium is thermonuclear bomb material. I raise the question, should the United States be exporting thermonuclear bomb material to South Africa, a nation that has not signed the Nonproliferation Treaty and has unsafeguarded nuclear facilities and about the worst nonproliferation credentials we could find?

It is a matter of considerable concern, the kind of pressure they put on down there, with the kind of policies that they are pursuing.

Why are we exporting helium-3 to South Africa?

Mr. KENNEDY. No decision has been reached, Senator. It is still under careful consideration. I understand that you have been provided a letter from the Department of Energy in connection with the material itself. And its potential in a nonproliferation risk sense. That and all related issues are still under consideration.

When we have reached a conclusion, I can assure you that we would want to inform you of it, which we will.

Senator PERCY. Is it true that helium-3 can be used to make tritium?

Mr. KENNEDY. The answer to that is yes. I would leave it to the technical experts to give you a fuller description which I think is in that letter. My understanding is that using the material, this particular

material, however, is effective in the highest order of sophistication only.

Senator PERCY. Just one other technical question:

Does it mean that helium-3 can be used in a nuclear explosive?

Mr. KENNEDY. Helium-3 can be used to make tritium, which can be used in a nuclear explosive.

Senator PERCY. I sent down for a copy of my own report that I had written on South Africa in April of 1976. On that visit, I visited South Africa's national nuclear research center at Valindaba and met with the director of the facility.

It is a sophisticated facility. No question about that.

Mr. KENNEDY. This is Valindaba?

Senator PERCY. Yes.

Mr. KENNEDY. Yes.

Senator PERCY. A couple of days after I visited there, I met with Prime Minister Voerster. He had just returned from an official visit to Israel which occasioned a good deal of speculation about a possible armaments agreement between the two countries.

I put the question to him. He emphatically denied that there had been any such agreement and he said that the only understanding they reached were of economic and commercial nature.

I raised the subject of the Nuclear Proliferation Treaty with him and pointed out that many nations would be favorably impressed if South Africa signed the treaty.

The Prime Minister said the subject would be reviewed intensively by his Government during the coming months. I have heard nothing further on that.

Do you have any knowledge that they still have it under active consideration?

Have they decided definitely not? I wonder if you could fill me in either now or subsequently for the record what the State Department has done since that visit? They have a copy of this report. I sent it over to them, to press upon South Africa the desirability of their safeguarding their facilities and coming under the peaceful nuclear regime, the Nuclear Proliferation Treaty, as 113 other countries have.

Mr. KENNEDY. As far as I know, the question still remains under consideration by the South African Government but I do not anticipate an early resolution. But at the same time, and I would like to provide a more detailed answer for the record, let me assure you that on every possible occasion we make known to the Government of South Africa our interest in their adherence to the NPT and their acceptance of full scope safeguards.

Senator PERCY. Why does it take us so long to make a decision if we have a policy? We know that helium-3 can be used in a nuclear explosive. We know that they have had the NPT under active consideration since 1976. And I know it is a desirable thing to have a dialog with South Africa.

I have tried to keep that dialog up too. I share your hope that they will eventually see the light and accept safeguards but I simply don't understand in the meantime why we would not want to decisively give an answer—and pretty promptly—that we don't intend to supply it so long as they do not sign the NPT.

Mr. KENNEDY. Let me just point out that while it is theoretically possible to use this material to make tritium for a nuclear device, in a practical sense it is not a very sensible one.

Senator PERCY. I am glad to have that assurance. It helps a great deal. Senator Glenn and I did draft the Non-Proliferation Act. We wanted the United States to be a reliable supplier of nuclear materials to nations that have accepte full scope safeguards and foresworn nuclear weapons.

I do not understand why we want to supply export material to South Africa that has possible nuclear weapons use and your assurance on that is very, very helpful indeed.

We did talk a lot in those days about being a reliable supplier. We want to be with those countries that are safeguarded.

Can you further help us define what the administration now means by a reliable supplier? Does that mean a reliable supplier of bomb material? Certainly not, I hope.

We clarified that point quickly. There is no necessity to be a reliable supplier. We don't have to supply that kind of material.

Mr. KENNEDY. Of course we don't supply bomb material, Senator. But on the other hand, the concept of a reliable supply is involved in discussions with our Japanese and Euratom friends as to transferability and consent rights over use of plutonium and the reprocessing thereof.

That theoretically is bomb material. So I would not want to imply indirectly that we would foreclose any possibility of agreeing with a commerce in plutonium among those countries in which we would have a role to play and in which rigorous safeguards would be achieved.

Senator PERCY. I have just two more questions:

One, on a Washington Post story that appeared recently, an article that said two U.S. companies helped arrange the sales of enriched uranium to South Africa from some European countries.

This seems to undercut completely U.S. leverage over South Africa to accept safeguards. Certainly while I understand that the action of these two companies, Edlow International and Swuco is outside the reach of present laws, it seems that we should have some recourse against this sort of behavior that totally counters U.S. policy.

It is particularly true that the companies that undercut our policy make their profits through the benefit of receiving U.S. nuclear export licenses.

Would you favor legislation that would deny companies that do things like this the privilege of receiving nuclear export licenses?

Mr. KENNEDY. Senator, as I have expressed in my statement, I am not sure that such legislation would be very practical. It would involve trying to control the normal brokerage kinds of activities that go on in the marketplace.

Much of it is simply outside U.S. control in any event.

Senator PERCY. While we are talking about nuclear trade, we are talking a lot more than just simply the exchange of technology and materials. It is a matter of prestige really, in a sense.

Will one effect of this export be to legitimize South Africa's nuclear program by renewing cooperation with the United States?

What is our policy with respect to nuclear cooperation with South Africa now?

Mr. KENNEDY. We don't have any nuclear cooperation essentially with South Africa at this point, Senator. This would not imply any nuclear cooperation. We have made it clear to the South Africans that a condition of genuine cooperation would be NPT adherence and full scope safeguards. They understand that. We would not—in other words, if we were to decide to ship the helium-3, which I assume is again at the point of question, it would be on the understanding that it was not nuclear proliferation related. And that is being investigated too as one of the things that will be taken into account in whatever decision is reached—a precise determination of what they propose to use the helium-3 for.

Senator PERCY. Would we take into account not only the problem of a nuclear explosion coming from South Africa while we ship nuclear goods to them, but also the perception other nations have of shipments of nuclear materials to that nation? This is a highly sensitive issue with the surrounding countries in Southern Africa. They would look upon this as a signal that we are engaging in a practice which certainly would be contrary to their long-run interests.

Could you give me your perception of how other nations in that area, front-line nations, would regard shipments of sensitive materials to South Africa?

Mr. KENNEDY. If in fact they were sensitive materials, Senator, I would think that they could well be uncomfortable about that and not at all take kindly our decision to do so.

But I would be presumptious to make any judgment on that. I think that is for them to say.

Senator PERCY. I want to thank you very much, indeed, for your testimony and for your colleagues' appearances.

If you would like to add anything at this time, we would be happy to hear it. Are there any comments you would like to make?

Mr. DEVINE. Just one minor point. The heluim-3 will of course be used in nuclear related experiments but in and of itself if doesn't meet the criteria for being NRC licensed. Hence the full scope safeguards and so forth do not apply. If they did, there would be no question.

Senator PERCY. We thank you, very much.

Mr. KENNEDY. If I may, Senator, one point of clarification might be useful. When we were talking about peaceful nuclear explosions, I hope I left no impression that we think that peaceful nuclear explosions are either sensible or desirable. We no longer have such a program. We are not pursuing such a program and suggest others not do so.

Senator PERCY. Thank you, very much indeed. We appreciate your help this morning.

[The prepared statement of Mr. Kennedy follows.]

STATEMENT OF UNDERSECRETARY OF STATE RICHARD T. KENNEDY BEFORE
THE SUBCOMMITTEE ON ENERGY, NUCLEAR PROLIFERATION AND
GOVERNMENTAL PROCESSES, COMMITTEE ON GOVERNMENTAL AFFAIRS
UNITED STATES SENATE
MAY 13, 1982

MR. CHAIRMAN:

THANK YOU FOR THE OPPORTUNITY TO APPEAR BEFORE THIS COMMITTEE TO DISCUSS CERTAIN ASPECTS OF US POLICY TO PREVENT THE SPREAD OF NUCLEAR EXPLOSIVES. YOUR LETTER OF INVITATION IDENTIFIED A NUMBER OF QUESTIONS IN WHICH THE COMMITTEE HAS EXPRESSED INTEREST SUCH AS THE MANAGEMENT OF OUR NONPROLIFERATION POLICY, THE ADVISABILITY OF ESTABLISHING LEGAL CONTROLS ON CERTAIN KINDS OF ACTIVITIES BY US COMPANIES OR THEIR LICENSEES, AND, FINALLY, THE ADMINISTRATION'S ACTIONS IN RESPONSE TO SENATE RESOLUTION 179.

I WILL, OF COURSE, ADDRESS EACH OF THESE IN MY STATEMENT. BUT I ALSO THOUGHT I COULD PROFITABLY USE THIS HEARING TO DESCRIBE FOR YOU THE KEY ELEMENTS OF THIS ADMINISTRATION'S NONPROLIFERATION POLICY.

FROM THE BEGINNING OF THE NUCLEAR AGE, ALL ADMINISTRATIONS HAVE BEEN FIRMLY COMMITTED TO THE GOAL OF PREVENTING THE SPREAD OF NUCLEAR EXPLOSIVES. WHILE DETAILED POLICY APPROACHES HAVE VARIED, THE LAST EIGHT PRESIDENTS HAVE RECOGNIZED THE CRITICAL RELATIONSHIP BETWEEN NONPROLIFERATION AND US SECURITY INTERESTS. THAT RECOGNITION IS AT THE CORE OF PRESIDENT REAGAN'S POLICY.

EQUALLY BASIC TO OUR NONPROLIFERATION POLICY, AND TO THE NON-PROLIFERATION REGIME ITSELF, IS THIS ADMINISTRATION'S CONVICTION THAT NUCLEAR ENERGY, IN THE UNITED STATES AND AROUND THE WORLD, HAS A VITAL ROLE TO PLAY OVER THE NEXT DECADES IN PROVIDING ENVIRON-MENTALLY SAFE AND ECONOMICALLY EFFICIENT POWER FOR HOME AND INDUSTRY. THIS CONVICTION IS SHARED BY MANY OTHER NATIONS, FROM THE EURATOM COUNTRIES AND JAPAN TO DEVELOPING COUNTRIES LIKE SOUTH KOREA AND SOUTH KOREA AND MEXICO. ALL SEE RELIANCE ON NUCLEAR POWER AS HELPING THEM MEET AN IMPORTANT PART OF THEIR ENERGY NEEDS.

CONSISTENT WITH OUR NONPROLIFERATION OBJECTIVES, WE ARE SEEKING WAYS TO ENABLE OUR NUCLEAR INDUSTRY TO PARTICIPATE VIGOROUSLY IN THESE DEVELOPMENTS. AS PRESIDENT REAGAN OBSERVED IN HIS JULY 16 STATEMENT, "THE UNITED STATES WILL COOPERATE WITH OTHER NATIONS IN THE PEACEFUL USES OF NUCLEAR ENERGY... TO CARRY OUT THESE POLICIES, I AM INSTRUCTING THE SECRETARY OF STATE, WORKING WITH THE OTHER RESPONSIBLE AGENCIES, TO GIVE PRIORITY ATTENTION TO EFFORTS...TO RE-ESTABLISH A LEADERSHIP ROLE FOR THE UNITED STATES IN INTERNATIONAL NUCLEAR AFFAIRS." UNLESS WE PLAY SUCH A LEADERSHIP ROLE WE MAY BE LESS ABLE TO ACHIEVE THE NONPROLIFERATION GOALS WE ALL SHARE.

AT THE SAME TIME, WITH MORE AND MORE NATIONS EMBARKING ON CIVILIAN NUCLEAR POWER PROGRAMS, IT IS ESSENTIAL THAT THE UNITED STATES AND OTHER COUNTRIES ADOPT POLICIES THAT INSURE THAT THE LEGITIMATE DEVELOPMENT OF NUCLEAR POWER IS NOT ACCOMPANIED BY THE SPREAD OF NUCLEAR EXPLOSIVES. WE WILL NOT COMPROMISE OUR NONPROLIFERATION PRINCIPLES IN PURSUIT OF COMMERCIAL GAIN, AND WILL CONTINUE TO ASK THE SAME FROM OTHERS.

IN MATTERS OF NONPROLIFERATION, JUST AS IN EVERY OTHER ASPECT OF FOREIGN POLICY, CONCRETE DISTINCTIONS SOMETIMES HAVE TO BE MADE AMONG THE VARIOUS COUNTRIES OF THE WORLD. PRESIDENT REAGAN HAS STATED THAT THE UNITED STATES WILL NOT INHIBIT CIVIL REPROCESSING AND BREEDER DEVELOPMENT IN COUNTRIES WITH ADVANCED NUCLEAR PROGRAMS WHERE IT IS NOT A PROLIFERATION RISK. THIS IS A REALISTIC RECOGNITION THAT JAPAN AND THE EURATOM COUNTRIES BELIEVE THAT SUCH ADVANCED FUEL CYCLE ACTIVITIES ARE NEEDED FOR THEIR ENERGY SECURITY. HOWEVER, WE ALSO RECOGNIZE THAT PLUTONIUM AND HIGHLY ENRICHED URANIUM ARE DANGEROUS MATERIALS WHOSE USE MUST BE CAREFULLY CONTROLLED AND SAFEGUARDED. TO ACKNOWLEDGE THAT IN CERTAIN CASES, USE OF PLUTONIUM IS SEEN TO BE A SENSIBLE ENERGY COURSE IS NOT TO ENCOURAGE REPROCESSING OR ADVANCED FUEL CYCLE ACTIVITIES WHERE THEY ARE NOT WARRANTED AS A COHERENT PART OF AN ADVANCED NUCLEAR PROGRAM.

MOREOVER, WE BELIEVE THAT GREATER REALISM AND FLEXIBILITY IN THE EXERCISE OF US CONSENT RIGHTS IS RELATED TO THE DEGREE TO WHICH OTHER SUPPLIERS WILL BE PREPARED TO COOPERATE WITH US ON IMPORTANT NONPROLIFERATION INITIATIVES SUCH AS IMPROVING EXPORT CONTROLS, MAKING EXPORT POLICIES MORE UNIFORM, AND IMPROVING IAEA

SAFEGUARDS. AND BY WORKING TOGETHER WITH JAPAN AND EURATOM, WE CAN BEST MINIMIZE THE RISKS INHERENT IN THE PRESENCE AND USE OF SEPARATED PLUTONIUM, WHETHER IN THE AREA OF PHYSICAL SECURITY, OF IMPROVED SAFEGUARDS, OR AVOIDANCE OF UNNECESSARY NATIONAL STOCKPILING. AND WE WILL CONTINUE TO MAKE OUR CONCERNS KNOWN ON THIS SUBJECT, AND TO WORK WITH OTHER NATIONS TO SOLVE THE DIFFICULT TECHNICAL PROBLEMS THAT EXIST.

THE ADMINISTRATION ALSO IS COMMITTED TO MAKING IT MORE DIFFICULT FOR COUNTRIES TO ACQUIRE THE TECHNICAL CAPABILITY TO BUILD NUCLEAR EXPLOSIVES. AS PRESIDENT REAGAN STATED IN HIS JULY 16TH POLICY STATEMENT, THE UNITED STATES WILL SEEK TO INHIBIT THE SPREAD OF SENSITIVE TECHNOLOGY, FACILITIES, AND MATERIAL, PARTICULARLY WHERE THE DANGER OF PROLIFERATION DEMANDS. BUT SUCH MEASURES CAN ONLY BUY TIME. WE MUST USE SUCH TIME WISELY TO REDUCE THE MOTIVATIONS THAT MAY LEAD COUNTRIES TO SEEK A NUCLEAR EXPLOSIVE CAPABILITY. STEPS NEED TO BE TAKEN TO ALLEVIATE THE MILITARY AND POLITICAL INSECURITY OF SUCH COUNTRIES. WAYS ALSO MUST BE FOUND TO REDUCE MUTUAL SUSPICION OF NEIGHBORING COUNTRIES, WHETHER BY ENCOURAGING ADHERENCE TO THE TREATY OF TLATELOLCO, ADHERENCE TO THE NONPROLIFERATION TREATY, OR ACCEPTANCE OF FULL SCOPE SAFEGUARDS. INITIATIVES TO IMPROVE REGIONAL AND GLOBAL STABILITY ARE CALLED FOR AS WELL.

EFFORTS TO STRENGTHEN IAEA SAFEGUARDS ARE ANOTHER ESSENTIAL ELEMENT OF OUR NON-PROLIFERATION POLICY. SAFEGUARDS DO NOT DEAL WITH ALL ASPECTS OF PROLIFERATION RISK. THEIR PURPOSE IS TO DETECT, AND BY THE RISK OF SUCH DETECTION DETER DIVERSION, NOT PREVENT IT. BUT IT IS CRITICAL THAT THEY DO THAT DEFINED TASK

EFFECTIVELY. WHILE THE TECHNICAL EFFECTIVENESS OF IAEA SAFEGUARDS HAS IMPROVED STEADILY OVER THE RECENT PAST, IT STILL IS MORE UNEVEN THAN WE WISH. WE ARE WORKING BOTH BILATERALLY IN COOPERATION WITH THE IAEA SECRETARIAT AND MULTILATERALLY THROUGH A NUMBER OF SPECIAL PROJECTS TO IMPROVE IAEA SAFEGUARDS. SEVERAL OF THESE EFFORTS FOCUS ON THE PARTICULAR PROBLEM OF SAFEGUARDING SENSITIVE NUCLEAR FACILITIES.

FOR EXAMPLE, WE ARE WORKING CLOSELY WITH THE IAEA TO IMPROVE THE QUALITY AND CAPABILITIES OF ITS INSPECTORATE. THROUGH COURSES GIVEN AT US LABORATORIES AND BY US EXPERTS WHO GO TO VIENNA SOLELY FOR THIS PURPOSE, IAEA INSPECTORS ARE CONTINUOUSLY TRAINED IN NEW TECHNIQUES AND METHODS DESIGNED TO ENHANCE THE EFFECTIVE AND TIMELY APPLICATION OF IAEA SAFEGUARDS. THIS EFFORT HAS SO IMPRESSED THE IAEA THAT THEY FORMED FIRST A TRAINING UNIT, AND THEN A TRAINING SECTION TO TRAIN SYSTEMATICALLY NEW INSPECTORS AND TO KEEP VETERAN INSPECTORS UP TO DATE. WE PLAN TO CONTINUE AND EVEN MODESTLY EXPAND OUR TRAINING EFFORTS, HOPEFULLY IN CONJUNCTION WITH OTHER INTERESTED IAEA MEMBER STATES.

SIMILARLY, IN THE AREA OF SAFEGUARDS INSTRUMENTATION WE HAVE DEVELOPED EXPLICITLY FOR IAEA USE OVER THE PAST FIVE YEARS TWENTY TYPES OF EQUIPMENT FOR VERIFICATION OF NUCLEAR MATERIAL. SOME OF THE EQUIPMENT IS IN ROUTINE USE AND MUCH OF IT IS IN GREAT DEMAND BY THE INSPECTORATE. WE ARE CONSIDERING WAYS TO JOIN WITH OTHER COUNTRIES IN HELPING THE IAEA ACQUIRE AND DEPLOY THIS NEWLY DEVELOPED EQUIPMENT. THIS SHOULD LEAD IN THE NEXT FEW YEARS TO A SIGNIFICANT INCREASE IN IAEA CAPABILITIES IN MEASUREMENT OF URANIUM AND PLUTONIUM BY NONDESTRUCTIVE TECHNIQUES.

FURTHER, THROUGH OUR PROGRAM OF TECHNICAL ASSISTANCE TO IAEA SAFEGUARDS, 213 MUTUALLY AGREED PROJECTS HAVE BEEN COMPLETED SINCE ITS INCEPTION IN 1977 AND ANOTHER 50 ARE CURRENTLY UNDERWAY AT A TOTAL COST OF $27 MILLION.

THE EXECUTIVE BRANCH AND NRC ALSO ACTIVELY RECRUIT PERSONNEL TO SERVE IN VIENNA AS INSPECTORS. WE ARE CURRENTLY EXAMINING WAYS OF IMPROVING OUR PROCEDURES FOR RECRUITMENT TO ASSURE THAT ONLY THE HIGHEST QUALITY PERSONNEL ARE RECOMMENDED TO THE IAEA. AND WE ARE ENCOURAGING OTHER IAEA MEMBER STATES TO DO THE SAME.

WE STRONGLY BELIEVE THAT THE IAEA IS A SPECIAL ORGANIZATION WITHIN THE UN FAMILY. IN ITS SAFEGUARDS ROLE, IT PROVIDES A UNIQUE SERVICE UPON WHICH ALL MEMBER STATES DEPEND AND AROUND WHICH NEARLY ALL NUCLEAR COMMERCE IS ORGANIZED. PRESERVATION OF THE AGENCY'S EFFECTIVENESS AND CREDIBILITY IS AN ESSENTIAL PART OF US NON-PROLIFERATION EFFORTS AND THE AGENCY MUST BE SUPPORTED AND IMPROVED. THE PRESIDENT MADE THAT CLEAR IN HIS STATEMENT OF JULY 16, 1981. THE ADMINISTRATION HAS SUPPORTED, THEREFORE, MODEST REAL GROWTH IN THE IAEA'S BUDGET ESPECIALLY AS IT RELATES TO SAFEGUARDS. COUPLED WITH MODIFICATIONS IN IAEA RECRUITMENT PROCEDURES, THIS GROWTH MAKES IT POSSIBLE FOR THE IAEA TO COME CLOSER TO MEETING ITS INSPECTION GOALS.

CONSIDERABLE CONCERN HAS BEEN RAISED RECENTLY ABOUT THE TECHNICAL TASK OF SAFEGUARDING SENSITIVE ENRICHMENT AND REPROCESSING FACILITIES. WE RECOGNIZE THE PROBLEM, AND ARE TAKING STEPS IN COOPERATION WITH OTHER COUNTRIES TO DEAL WITH IT.

THE UNITED STATES IS CURRENTLY ENGAGED IN A MULTINATIONAL EXERCISE TO DEFINE EFFECTIVE SAFEGUARDS APPROACHES FOR GAS CENTRI-

FUGE ENRICHMENT PLANTS. IN ADDITION TO THE UNITED STATES, AUSTRALIA, JAPAN, THE URENCO GOVERNMENTS, (UK, FRG, NETHERLANDS), AND THE SAFEGUARDS INSPECTORATES OF EURATOM, AND THE IAEA PARTICIPATE IN THIS PROJECT, CALLED THE HEXAPARTITE SAFEGUARDS PROJECT. ALL SIX COUNTRIES NOW HAVE, OR PLAN TO HAVE, GAS CENTRIFUGE ENRICHMENT FACILITIES UNDER IAEA SAFEGUARDS. MUCH PROGRESS HAS BEEN MADE. WE EXPECT THAT A RECOMMENDATION FOR A PREFERRED SAFEGUARDS APPROACH WHICH SHOULD BE ADEQUATE TO THE TASK WILL BE MADE TO THE IAEA LATE THIS YEAR.

WE ALSO ARE CONTINUING OUR WORK ON REPROCESSING PLANT SAFEGUARDS. THE TOKAI ADVANCED SAFEGUARDS TECHNOLOGY EXERCISE (TASTEX) WAS SUCCESSFULLY CONCLUDED ABOUT ONE YEAR AGO. SINCE THEN INSTRUMENTS AND TECHNIQUES DEVELOPED THROUGH TASTEX ARE GAINING ACCEPTANCE INTERNATIONALLY. WORK ON SAFEGUARDS TECHNIQUES ALSO IS BEING CONDUCTED AT THE BARNWELL FACILITY. WE ARE CONTINUING OUR EFFORTS TO HAVE THE NEW TECHNIQUES AND EQUIPMENT INCORPORATED INTO IAEA SAFEGUARDS APPROACHES FOR REPROCESSING FACILITIES. CONTINUED WORK AND COOPERATION ON THE PART OF INTERESTED COUNTRIES AND THE IAEA WILL BE NEEDED TO DEVELOP SUCCESSFULLY ADEQUATE SAFEGUARDS TECHNIQUES AND EQUIPMENT FOR THE LARGER REPROCESSING PLANTS NOW IN THE PLANNING STAGE.

I WOULD LIKE NOW TO ADDRESS THE SPECIFIC ISSUES RAISED IN THE CHAIRMAN'S APRIL 14TH LETTER INVITING MY TESTIMONY.

THE FIRST DEALT WITH THE MANAGEMENT OF OUR NONPROLIFERATION POLICY AND THE IMPACT THAT CERTAIN PERSONNEL AND ORGANIZATIONAL CHANGES MIGHT HAVE ON ITS EFFECTIVENESS. IN MY VIEW, WE HAVE A

VERY ABLE TEAM OF PEOPLE HANDLING OUR NONPROLIFERATION POLICY, NOT ONLY IN THE DEPARTMENT OF STATE, BUT ALSO IN OTHER PARTS OF THE EXECUTIVE BRANCH INCLUDING THE NATIONAL SECURITY COUNCIL, THE ARMS CONTROL AND DISARMAMENT AGENCY, THE DEPARTMENT OF ENERGY AND THE DEPARTMENT OF DEFENSE. ALL ARE HARD-WORKING, DEDICATED PROFESSIONALS WHO ARE STRONGLY COMMITTED TO THE OBJECTIVE OF HALTING THE SPREAD OF NUCLEAR EXPLOSIVES.

THE LEAD RESPONSIBILITY WITHIN THE U.S. GOVERNMENT FOR MANAGING OUR NONPROLIFERATION EFFORTS RESTS WITH THE ASSISTANT SECRETARY OF STATE FOR OCEANS AND INTERNATIONAL ENVIRONMENTAL AND SCIENTIFIC AFFAIRS (OES). THE PRESENT OES ASSISTANT SECRETARY JAMES L. MALONE, HAS BEEN ASKED BY THE PRESIDENT AND SECRETARY HAIG TO DEVOTE FULL-TIME TO MATTERS RELATING TO THE LAW OF THE SEA AND U.S. OCEANS POLICY. MR. MALONE, WHO HAS SERVED SINCE MARCH, 1981 AS THE PRESIDENT'S SPECIAL REPRESENTATIVE FOR LAW OF THE SEA, HAS BEEN NOMINATED AS AMBASSADOR-AT-LARGE TO PERFORM THESE RESPONSIBILITIES. MR. MALONE HAS BEEN AND CONTINUES TO BE RESPONSIBLE FOR THE LAW OF THE SEA, OCEANS POLICY, NUCLEAR NONPROLIFERATION, AND OTHER SUBJECTS FALLING WITHIN THE PURVIEW OF THE OES BUREAU. HE HAS DONE AN EXCELLENT JOB IN THIS CAPACITY. THE HEAVY DEMANDS RELATED TO OCEANS POLICY, NOW MORE THAN EVER, SIMPLY MAKE IT GOOD MANAGEMENT SENSE TO ASSIGN SOMEONE FULL-TIME TO THAT JOB. CANDIDATES ARE NOW BEING EVALUATED TO SUCCEED MR. MALONE AS ASSISTANT SECRETARY.

EACH OF THE UNDER SECRETARIES OF STATE HAS BEEN ASKED BY THE SECRETARY TO PROVIDE GENERAL POLICY GUIDANCE AND OVERSIGHT FOR CERTAIN SPECIFIC AREAS OF THE DEPARTMENT'S MANY ACTIVITIES. IN ADDITION TO MY GENERAL MANAGEMENT AREA OF RESPONSIBILITIES,

THE SECRETARY HAS ASKED ALSO THAT I PROVIDE THE BROAD POLICY GUIDANCE AND OVERSIGHT ON HIS BEHALF OVER NON-PROLIFERATION AND SAFEGUARDS MATTERS. IN THAT SAME CONNECTION, I SERVE AS THE UNITED STATES REPRESENTATIVE TO THE INTERNATIONAL ATOMIC ENERGY AGENCY. I WANT TO EMPHASIZE, HOWEVER, THAT DAY-TO-DAY SUPERVISION RESTS, AS I INDICATED, WITH THE ASSISTANT SECRETARY FOR OCEANS, AND INTERNATIONAL ENVIRONMENTAL AND SCIENTIFIC AFFAIRS, AND UNDER HIM THE DEPUTY ASSISTANT SECRETARY OF STATE FOR NUCLEAR ENERGY AFFAIRS. IN MY POLICY GUIDANCE ROLE I MAINTAIN CLOSE AND REGULAR CONTACT WITH THE DEPUTY SECRETARY OF ENERGY AND THE DIRECTOR OF THE ARMS CONTROL AND DISARMAMENT AGENCY. MESSRS DAVIS, ROSTOW AND I WORK CLOSELY TOGETHER IN ASSURING A CO-HERENT AND CONSISTENT POLICY THRUST ACROSS THE EXECUTIVE BRANCH.

OTHER AGENCIES ALSO PLAY AN IMPORTANT PART AND HAVE BEEN EXTREMELY HELPFUL IN DEFINING OUR OVERALL POLICY AS WELL AS IN BRINGING THEIR EXPERTISE TO BEAR ON ITS DETAILED IMPLEMENTATION. THE DEPARTMENT OF ENERGY HAS A PARTICULARLY CRUCIAL PART TO PLAY IN PROVIDING TECHNICAL ASSISTANCE TO OUR NEGOTIATIONS AND IN EXERCISING PRIMARY RESPONSIBILITY IN HANDLING EXPORTS OF NUCLEAR TECHNOLOGY AND IN PROCESSING SUBSEQUENT ARRANGEMENTS INCLUDING SUCH IMPORTANT AREAS AS REPROCESSING AND PLUTONIUM USE. THE DEPARTMENT OF ENERGY ALSO PLAYS A KEY ROLE IN PROVIDING TECHNICAL EXPERTISE AND ASSISTANCE IN THE DEVELOPMENT AND EXTENSION OF EFFECTIVE SAFEGUARD SYSTEMS EQUIPMENT. WHATEVER THE FUTURE ROLE OF DOE, I AM ASSURED THAT THE IMPORTANT FUNCTIONS WHICH THAT DEPARTMENT NOW EXERCISES IN THE NONPROLIFERATION AREA WILL CONTINUE TO BE CARRIED OUT IN AN EFFECTIVE WAY.

THE ARMS CONTROL AND DISARMAMENT AGENCY (ACDA) PLAYS AN EQUALLY IMPORTANT PART IN OUR NONPROLIFERATION EFFORTS. THE INITIAL DEVELOPMENT, OF OUR POLICY AS WELL AS ITS FURTHER IMPLEMENTATION WAS CLOSELY COORDINATED WITH ACDA. ON A DAY-TO-DAY BASIS, THE STAFF IN ACDA PROVIDES CRITICAL EXPERTISE ON ISSUES RANGING FROM IMPROVING IAEA SAFEGUARDS TO EXPORT ISSUES RELATED TO SENSITIVE COUNTRIES. THE ACDA STAFF ALSO HAS BEEN OF GREAT IMPORTANCE IN EFFORTS TO UPGRADE THE EXISTING NUCLEAR SUPPLIERS' TRIGGER LISTS, AND SENIOR POLICY MAKERS IN ACDA PARTICIPATE ON A REGULAR BASIS ACROSS THE WHOLE RANGE OF NONPROLIFERATION ISSUES.

THE DEPARTMENT OF DEFENSE PARTICIPATES FULLY IN INTER-AGENCY DELIBERATIONS ON EXPORT LICENSING AND SUBSEQUENT ARRANGEMENTS, AND IS INVOLVED IN MAJOR NONPROLIFERATION POLICY DEVELOPMENT. THIS IS IN KEEPING WITH THE STRONG EMPHASIS OF THIS ADMINISTRATION ON NON-PROLIFERATION AS AN ELEMENT OF OUR NATIONAL SECURITY POLICY.

THE CHAIRMAN ALSO REQUESTED THE ADMINISTRATION'S VIEWS ON WHETHER NEW LEGISLATION IS NEEDED TO CONTROL THE ACTIVITIES OF US COMPANIES IN THEIR DEALINGS WITH CERTAIN COUNTRIES OF PROLIFERATION CONCERN. I BELIEVE YOU HAVE IN MIND TWO SPECIFIC CASES, ONE INVOLVING SOUTH AFRICA, THE OTHER PAKISTAN.

US COMPANIES DID ASSIST IN ARRANGING FOR THE FUELING OF SOUTH AFRICA'S KOEBERG REACTORS, ACTING AS BROKERS FOR SELLERS OF SURPLUS ENRICHED URANIUM IN EUROPE AND THE SOUTH AFRICAN BUYERS. THE FUEL THEN WAS PROVIDED TO A FRENCH FIRM FOR FABRICATION UNDER A LONGSTANDING CONTRACT. NO US ORIGIN MATERIAL, EQUIPMENT OR TECHNOLOGY WAS INVOLVED. ANY COMPANY, ABROAD OR IN

11-269 O - 83 - 4

THE US, COULD PROVIDE SUCH A SERVICE AND SUCH ACTIVITY WOULD NOT TRIGGER SUPPLIER CONTROLS AS WOULD, FOR EXAMPLE, THE EXPORT OF FUEL FROM ONE'S OWN TERRITORY.

I DO NOT BELIEVE THAT LEGISLATION EITHER PROHIBITING BROKERAGE FUNCTIONS OR REQUIRING SPECIAL AUTHORIZATION TO ENGAGE IN SUCH ACTIVITIES IS LIKELY TO PROVE VERY PRACTICAL FOR SEVERAL REASONS. FIRST, BROKERAGE IS SO VERY COMMON IN THE INTERNATIONAL URANIUM MARKET THAT IT WOULD BE NEARLY IMPOSSIBLE TO CONTROL THIS KIND OF ACTIVITY IN THE ABSENCE OF WIDESPREAD COOPERATION AMONG ALL COUNTRIES INVOLVED IN THE NUCLEAR TRADE. HOWEVER, IT IS HIGHLY UNLIKELY THAT OTHER GOVERNMENTS WOULD BE PREPARED TO REGULATE BROKERING. SECOND, BROKERING NATURAL AND ENRICHED URANIUM TAKES PLACE SO FREQUENTLY AND SO QUICKLY THAT ANY EFFORT TO CONTROL THESE ACTIVITIES WOULD ONLY OVERLOAD THE BUREAUCRACY AND DIVERT ITS ATTENTION AND RESOURCES FROM MORE CRITICAL MATTERS. THIRD, IMPOSING SPECIAL CONTROLS ON FIRMS DEALING IN BROKERING WOULD UNNECESSARILY HAMPER THE SMOOTH FUNCTIONING OF THE INTERNATIONAL MARKET, IMPOSE NEEDLESS DELAYS AND COSTS ON U.S. UTILITIES AND THEIR FOREIGN COUNTERPARTS AND UNDERMINE COUNTRIES' CONFIDENCE IN THE SECURITY OF INTERNATIONAL NUCLEAR SUPPLY. THIS COULD IN TURN SET BACK OUR EFFORTS TO RESTORE THE U.S. POSITION AS A RELIABLE PARTNER IN INTERNATIONAL NUCLEAR TRADE. THUS, WE WOULD REGARD ATTEMPTS AT CONTROLLING THESE TYPES OF ACTIVITY TO BE IMPRACTICAL AND POSSIBLY DAMAGING TO OUR OVERALL INTEREST AND WE PREFER TO RELY ON DIPLOMACY AND OTHER METHODS AS MORE APPROPRIATE AND FAR MORE LIKELY TO BE EFFECTIVE.

THE SECOND CASE REFERRED TO BY THE CHAIRMAN'S LETTER CONCERNS RUMORED NEGOTIATIONS BETWEEN PAKISTAN AND A FOREIGN LICENSEE OF A U.S. COMPANY FOR THE PURCHASE OF NUCLEAR POWER REACTOR TECHNOLOGY. FIRST, LET ME SAY THAT WE ARE NOT AWARE THAT ANY SUCH NEGOTIATIONS HAVE OCCURED. THE LETTER STATES THAT SUCH A TRANSFER WOULD CONSTITUTE AN "END RUN" OF OUR NONPROLIFERATION POLICY. IN THIS AREA OF ACTIVITIES BY FOREIGN LICENSEES OF U.S. FIRMS, HOWEVER, WE ARE NOT WITHOUT LEGAL TOOLS.

SECTION 57B OF THE ATOMIC ENERGY ACT PROVIDES AUTHORITY FOR THE CONTROL OF NUCLEAR TECHNOLOGY EXPORTS BY US COMPANIES AND FOR CONTROL OVER ANY RETRANSFER OF SUCH TECHNOLOGY BY THEIR LICENSEES OR OTHER RECIPIENTS OF THE TECHNOLOGY. CURRENT REGULATIONS ON THIS SUBJECT ARE CONTAINED IN PART 810 OF TITLE 10 OF THE CODE OF FEDERAL REGULATIONS. EXPORTS OF SENSITIVE NUCLEAR TECHNOLOGY ARE SUBJECT TO STRINGENT CONTROLS UNDER SECTIONS 123, 127 AND 128 OF THE ATOMIC ENERGY ACT, AND UNDER THE NUCLEAR SUPPLIERS GUIDELINES. ACTIVITIES NOT INVOLVING TECHNOLOGY SENSITIVE FROM THE POINT OF VIEW OF PROLIFERATION ARE GENERALLY AUTHORIZED FOR THE FREE WORLD. ANY ACTIVITY BY A FOREIGN LICENSEE OR OTHER ENTITY OF A US COMPANY OF SENSITIVE NUCLEAR TECHNOLOGY WOULD REQUIRE SPECIFIC GOVERNMENT APPROVAL. THE EXPORT OF REACTOR TECHNOLOGY BY A US FIRM TO A FOREIGN LICENSEE, WHICH IS SPECIFICALLY MENTIONED IN YOUR LETTER, IS AUTHORIZED TO ALL BUT CERTAIN EMBARGOED DESTINATIONS -- GENERALLY COCOM COUNTRIES. IN THE LATTER CASE, SPECIFIC AUTHORIZATION AGAIN IS NEEDED, BEFORE SUCH NON-SENSITIVE TECHNOLOGY CAN BE EXPORTED.

We understand your concern that this general authorization might permit the export of reactor technology to a country of significant proliferation risk. We are working with the Department of Energy which administers these regulations to determine whether changes are warranted, e.g., a change in the list of countries generally authorized to receive US reactor technology. However, in thinking about possible changes, it is important not to overlook the complexity of this matter.

Based on our long-standing general authorization for free world countries, companies in the US have entered licensing arrangements with foreign firms. Reactor technology is now widely available in public literature worldwide. The impacts of any changes in the general authorization on US firms and their subsidiaries, and whether significant nonproliferation benefits can be expected, must be reviewed before a decision is made whether or not to change the regulations. We also have to avoid creating new uncertainty abroad and are perceived as once again changing the rules of the game retroactively.

The DOE regulations can be changed by the Executive Branch, without the need for new legislation, and the general authorization can be revoked for particular countries or in particular cases. Finally, there also are more informal ways to make known our views in cases in which there may be an adverse nonproliferation impact of a given vendor's actions or those of its licensee.

Let me now turn more broadly to the Administration's position on whether the Nuclear NonProliferation Act should be amended at

THE PRESENT TIME. I RAISE THIS PARTLY BECAUSE OF THE AMENDMENTS TO THE NNPA THAT HAVE RECENTLY BEEN INTRODUCED IN THE HOUSE.

THE WHITE HOUSE FACT SHEET RELEASED ON JULY 16, 1981, ACCOMPANYING THE PRESIDENT'S STATEMENT, CALLED FOR A REVIEW OF THE LAWS, REGULATIONS AND PROCEDURES IN THE NONPROLIFERATION AREA TO DETERMINE WHETHER CHANGES SHOULD BE SOUGHT. SUCH A REVIEW WAS CONDUCTED AND A NUMBER OF POSSIBLE AREAS FOR MODIFICATION IN THE LAW WERE IDENTIFIED IN AN INTER-AGENCY DISCUSSION PAPER. BUT SUBSEQUENTLY, A CONSENSUS WAS REACHED TO POSTPONE CONSIDERATION OF CHANGES TO THE LAW FOR THE TIME BEING AND THE ADMINISTRATION DECIDED NOT TO SUBMIT PROPOSED LEGISLATION TO CHANGE THE NNPA.

IN RECENT YEARS THERE HAVE BEEN A NUMBER OF MAJOR CHANGES IN US LAW AND POLICY -- AN ENRICHMENT CONTRACTING MORATORIUM, PRESIDENT FORD'S POLICY STATEMENTS, PRESIDENT CARTER'S POLICY STATEMENTS, AND THE NNPA. A FURTHER SET OF CHANGES AT THIS TIME, OR EVEN STARTING THE LEGISLATIVE PROCESS ON SUCH CHANGES WOULD CREATE A HIGH DEGREE OF UNCERTAINTY BOTH AT HOME AND ABROAD ABOUT THE FUTURE CONTENT OF US NON-PROLIFERATION LAW, PROCEDURES, AND POLICY. ONCE WE OPEN THE NUCLEAR NONPROLIFERATION ACT IN ALL ITS COMPLEXITY TO AMENDMENTS, IT IS NOT CLEAR WHAT THE OUTCOME WOULD BE. SUCH UNCERTAINTY COULD SO UNDERMINE THE US ROLE IN INTERNATIONAL NUCLEAR COMMERCE THAT WE WOULD BE UNABLE TO ACHIEVE OUR NONPROLIFERATION OBJECTIVES. IT ALSO WOULD HINDER OUR EFFORTS TO REFORGE COOPERATIVE TIES WITH THE OTHER MAJOR SUPPLIERS AND TO ENHANCE NUCLEAR RULES OF TRADE.

THE ADMINISTRATION SHARES THE ACT'S BASIC PRINCIPLES AND IS GUIDED BY THEM. MOREOVER, LIKE US, FOREIGN GOVERNMENTS HAVE

COME TO UNDERSTAND THE PROCEDURES THAT HAVE BEEN CREATED AND THE SYSTEM IS BEGINNING TO FUNCTION MORE AND MORE EFFICIENTLY. FOR ALL OF THESE REASONS IT SEEMS PRUDENT NOT TO SEEK CHANGES OF THE LAW AT THIS TIME.

YOUR LETTER ALSO ASKED WHAT STEPS THE ADMINISTRATION HAS TAKEN TO CARRY OUT THE SUGGESTIONS EXPRESSED IN SENATE RESOLUTION 179 OF JULY 1981. AMONG THE VARIOUS STEPS THIS RESOLUTION PROPOSES IS THAT THE UNITED STATES IN COOPERATION WITH OTHER SUPPLIERS TIGHTEN RESTRICTIONS ON NUCLEAR TRADE BY A)PLACING A MORATORIUM ON TRANSFERS OF SENSITIVE TECHNOLOGY TO AREAS OF CONSIDERABLE NONPROLIFERATION CONCERN SUCH AS THE MIDDLE EAST AND SOUTH ASIA B) LIMITING THE SIZE OF RESEARCH REACTORS AND ELIMINATING THE USE OF HIGHLY ENRICHED URANIUM IN SUCH REACTORS C)EXTENDING THE LIST OF NUCLEAR EQUIPMENT AND COMPONENTS WHOSE EXPORTS SHOULD BE MADE ONLY SUBJECT TO SAFEGUARDS D) MAKING NUCLEAR EXPORTS CONDITIONAL UPON THE ACCEPTANCE OF FULL SCOPE SAFEGUARDS BY RECIPIENT STATES AND E)IMPOSING ESTABLISHED SANCTIONS IN THE EVENT OF A SAFEGUARDS VIOLATION.

THE PRESIDENT'S STATEMENT OF JULY 16, 1981, STATED THAT THE US WOULD CONTINUE TO INHIBIT THE TRANSFER OF SENSITIVE NUCLEAR EQUIPMENT; MATERIALS AND TECHNOLOGY, PARTICULARLY WHERE THE DANGER OF PROLIFERATION DEMANDS. WE HAVE MADE CLEAR TO OTHER COUNTRIES OUR CONCERNS ABOUT THE EXPORT OF SENSITIVE TECHNOLOGIES SUCH AS ENRICHMENT AND REPROCESSING, AND WE KNOW OF NO PLANS BY OTHER NUCLEAR SUPPLIERS TO EXPORT SUCH TECHNOLOGIES TO SUCH VOLITALE AREAS AS THE MIDDLE EAST OR SOUTH ASIA. OTHER EXPORTING STATES SHARE OUR CONCERNS ABOUT THESE TWO REGIONS AND ARE EXERCISING

GREAT CAUTION AND RESTRAINT IN THEIR NUCLEAR TRADE WITH THESE AREAS.

WE ALSO HAVE TAKEN THE INITIATIVE IN REDUCING OR ELIMINATING THE NEED FOR HIGHLY ENRICHED URANIUM IN RESEARCH REACTOR PROGRAMS. THE US HAS HAD A PROGRAM IN EFFECT FOR SEVERAL YEARS AIMED AT DEVELOPING FUELS FOR AND MAKING THE NECESSARY TECHNICAL CONVERSIONS TO REDUCE THE ENRICHMENT LEVEL OF FUEL IN RESEARCH REACTORS. THIS IS CALLED THE REDUCED ENRICHMENT FOR RESEARCH AND TEST REACTORS (RERTR) PROGRAM. OTHER NATIONS HAVE BEEN STRONG AND INDEED ENTHUSIASTIC SUPPORTER OF THIS PROGRAM. HOVEVER, OUR OBJECTIVES CANNOT BE ACHIEVED THROUGH THREATS OR PRECIPITATE ACTIONS SUCH AS CUTTING OFF EXPORTS OF HEU. INSTEAD, A SOUND TECHNICAL PROGRAM OF DEVELOPMENT AND DEMONSTRATION IS NEEDED TO CONVINCE OTHER COUNTRIES OF THE TECHNICAL FEASIBILITY, SAFETY AND LICENSABILITY OF REDUCED ENRICHMENT FUELS ALONG WITH THE OBVIOUS NONPROLIFERATION BENEFITS OF CONVERTING TO THESE FUELS. IF WE CONTINUE TO PURSUE THIS APPROACH IN THE SPIRIT OF COOPERATION AND ASSISTANCE, I AM CONFIDENT THAT WE WILL SUCCEED IN OUR EFFORTS TO REDUCE SIGNIFICANTLY OR VIRTUALLY ELIMINATE THE USE OF HEU IN RESEARCH REACTORS AROUND THE WORLD.

WE HAVE BEEN WORKING VERY CLOSELY WITH THE PRINCIPAL SUPPLIER STATES TO ASSURE THAT NUCLEAR TRADE IS SUBJECT TO EFFECTIVE CONDITIONS AND CONTROLS. WE HAVE DELIBERATELY AVOIDED HIGHLY VISIBLE STEPS SUCH AS A FORMAL RECONVENING OF THE LONDON SUPPLIERS GROUP SINCE WE DO NOT BELIEVE THAT THIS WOULD CONTRIBUTE TO OUR SHARED OBJECTIVE OF FURTHER STRENGTHENING NUCLEAR EXPORT CONTROLS.

THE LONDON SUPPLIERS GROUP HAS BEEN CHARACTERIZED BY DEVELOPING COUNTRIES AS AN EFFORT BY A CARTEL OF ADVANCED NUCLEAR STATES TO SET UNILATERALLY THE RULES OF INTERNATIONAL NUCLEAR TRADE, DEPRIVING DEVELOPING COUNTRIES OF NEEDED NUCLEAR TECHNOLOGY, PRESERVING THE ADVANCED COUNTRIES' MONOPOLY ON SUCH TECHNOLOGY, AND RELEGATING THE DEVELOPING COUNTRIES TO A POSITION OF TECHNOLOGICAL INFERIORITY. ALTHOUGH SUCH CHARGES ARE GROUNDLESS, OTHER SUPPLIER STATES ARE PARTICULARLY SENSITIVE ABOUT AVOIDING ANY STEPS WHICH COULD BE CONSTRUED AS A CONCERTED ACTION ON THE PART OF THE PRINCIPAL EXPORTING STATES. BY CONTRAST, QUIET DIPLOMACY AND BILATERAL DISCUSSION ARE A MORE EFFECTIVE MEANS OF STRENGTHENING NONPROLIFERATION CONTROLS ON NUCLEAR EXPORTS.

IN PARTICULAR, A SO-CALLED TRIGGER LIST WAS ESTABLISHED BY PARTIES TO THE TREATY ON THE NONPROLIFERAION OF NUCLEAR EXPLOSIVES (NPT) IN ORDER TO CARRY OUT THEIR OBLIGATIONS UNDER ARTICLE III OF THE TREATY. THE LONDON SUPPLIERS GUIDELINES ESTABLISHED AN EXPANDED TRIGGER LIST TO INCLUDE EXPORTS OF SENSITIVE NUCLEAR TECHNOLOGY. THESE LISTS HAVE BEEN GENERALLY EFFECTIVE IN ASSURING THAT SIGNIFICANT NUCLEAR EXPORTS ARE NOT BEING MADE TO UNSAFEGUARDED PROGRAMS. HOWEVER, MANY ITEMS ON THE LIST ARE QUITE GENERAL AND THERE IS A NEED TO CLARIFY AND MAKE MORE PRECISE WHAT PARTICULAR EQUIPMENT BELONGS ON THESE LISTS. MOREOVER, CERTAIN DUAL USE ITEMS WHICH DO NOT FALL ON ANY LIST SHOULD BE SUBJECT TO EXPORT CONTROLS TO ASSURE THAT THEY ONLY GO TO SAFEGUARDED NUCLEAR FACILITIES. WE HAVE TAKEN IMPORTANT INITIATIVES ON BOTH THESE FRONTS.

ANOTHER AREA IN WHICH WE HAVE TAKEN ACTION IS PROMOTING MORE WIDESPREAD ACCEPTANCE OF FULL-SCOPE SAFEGUARDS. THE NUCLEAR NON-PROLIFERATION ACT REQUIRES THAT NON-NUCLEAR WEAPONS STATES HAVE ALL THEIR PEACEFUL NUCLEAR FACILITIES UNDER IAEA SAFEGUARDS AS A CONDITION OF U.S. NUCLEAR EXPORTS. IN ADDITION, THE PRESIDENT'S NONPROLIFERATION MESSAGE OF LAST JULY STATED THAT WE WOULD CONTINUE TO URGE OTHER SUPPLIERS TO REQUIRE FULL-SCOPE SAFEGUARDS AS A CONDITION OF ANY SIGNIFICANT NEW SUPPLY. THOUGH SEVERAL OTHER NUCLEAR EXPORTERS ARE RELUCTANT TO ADOPT A FULL-SCOPE SAFEGUARDS REQUIREMENT FOR THEIR EXPORTS UNTIL ALL NUCLEAR SUPPLIERS DO THE SAME, WE HAVE BEEN STRESSING THE IMPORTANCE OF FULL-SCOPE SAFE-GUARDS TO THE NONPROLIFERATION REGIME. THIS IS A DIFFICULT AND CHALLENGING AREA; BUT WE ARE HOPEFUL OF PROGRESS AND WILL CONTINUE TO USE OUR DIPLOMATIC RESOURCES TO GAIN WIDER ACCEPTANCE OF THIS CRITICAL NONPROLIFERATION NORM.

FINALLY, PRESIDENT REAGAN'S JULY 16TH NONPROLIFERATION STATE-MENT MADE CLEAR THAT "THE UNITED STATES WILL VIEW A MATERIAL VIOLATION OF (THE TREATY OF TLATELOLCO OR THE NPT) OR AN INTER-NATIONAL SAFEGUARDS AGREEMENT AS HAVING PROFOUND CONSEQUENCES FOR INTERNATIONAL ORDER AND UNITED STATES BILATERAL RELATIONS, AND ALSO VIEW ANY NUCLEAR EXPLOSION BY A NON-NUCLEAR-WEAPON STATE WITH GRAVE CONCERN." IT IS NOT FEASIBLE OR DESIRABLE, HOWEVER, TO ESTABLISH IN THE ABSTRACT A PRECISE AND COMPLETE SET OF SANCTIONS WHICH THE U.S. AND OTHER COUNTRIES WOULD IMPOSE IN THE EVENT OF A VIOLATION. COMMON SENSE SUGGESTS THAT THE U.S. RESPONSE WOULD HAVE TO BE TAILORED TO OUR PARTICULAR RELATION-

SHIP WITH THE COUNTRY IN QUESTION. NEVERTHELESS, IT IS IMPORTANT THAT WE AND OTHERS MAKE CLEAR THAT OUR BILATERAL RELATIONS WOULD BE ADVERSELY AFFECTED IN THE EVENT OF SUCH PROLIFERATION ACTIONS. WE HAVE DONE SO AND WILL CONTINUE TO DO SO.

THUS, CONSISTENT WITH SENATE RESOLUTION 179, THIS ADMINISTRATION CLEARLY HAS TAKEN THE INITIATIVE ON A NUMBER OF FRONTS TO STRENGTHEN THE INTERNATIONAL NONPROLIFERATION REGIME. THIS SOMETIMES IS OVERLOOKED BECAUSE LITTLE PUBLICITY HAS BEEN GIVEN TO THESE EFFORTS. BUT WE BELIEVE THAT THE QUIET DIPLOMATIC STEPS AND MEASURED TECHNICAL APPROACH WE HAVE TAKEN HAVE THE BEST CHANCE OF IMPROVING NUCLEAR EXPORT CONTROLS, EXPANDING SAFEGUARDS COVERAGE, AND WINNING WIDESPREAD ACCEPTANCE FOR REDUCED ENRICHMENT FUELS. AND THESE STEPS ARE BUT PART OF THE OVERALL NONPROLIFERATION EFFORT I DESCRIBED EARLIER.

SENATE RESOLUTION 179 ALSO CALLED FOR A PROMPT REEVALUATION OF WORLD NUCLEAR ENERGY POLICY, CULMINATING IN A CONFERENCE TO AGREE UPON WAYS BOTH TO REDUCE SECURITY CONCERNS AND STRENGTHEN THE NONPROLIFERATION REGIME. THE U.S. IS INVOLVED IN A NUMBER OF INTERNATIONAL GATHERINGS ADDRESSING QUESTIONS OF THIS NATURE. ONE IS THE COMMITTEE ON ASSURANCE OF SUPPLY (CAS) WHICH IS TAKING PLACE UNDER THE AUSPICES OF THE IAEA. THE U.S. IS AN ACTIVE PARTICIPANT IN THIS EFFORT WHICH HAS BEEN ESTABLISHED TO DEFINE WAYS TO IMPROVE SECURITY OF NUCLEAR SUPPLY WHILE ASSURING THAT INTERNATIONAL NUCLEAR TRADE IS FULLY CONSISTENT WITH THE NEED TO PREVENT THE SPREAD OF NUCLEAR WEAPONS. IN ADDITION, A CONFERENCE ON THE PEACEFUL USES OF NUCLEAR ENERGY (PUNE) IS NOW BEING PLANNED FOR AUGUST OF 1983. TWO PREPARATORY CONFERENCES HAVE ALREADY BEEN HELD TO LAY THE GROUNDWORK FOR THE PLENARY MEETING NEXT YEAR.

THE AGENDA FOR THIS CONFERENCE IS LIKELY TO BE A WIDE RANGING ONE. WHILE MEETINGS SUCH AS THESE CAN PRODUCE POSITIVE RESULTS, THEY ALSO CARRY CERTAIN RISKS AND WE MUST BE ALERT TO ASSURE THAT THEY DO NOT RESULT IN ANY WEAKENING OF INTERNATIONAL NONPROLIFERATION NORMS. FOR THAT REASON THE U.S. INTENDS TO PARTICIPATE ACTIVELY AND CONSTRUCTIVELY IN CONFERENCES LIKE PUNE.

IN HIS JULY 16, 1981, NONPROLIFERATION POLICY STATEMENT, PRESIDENT REAGAN EMPHASIZED THAT "FURTHER PROLIFERATION WOULD POSE A SEVERE THREAT TO INTERNATIONAL PEACE, REGIONAL AND GLOBAL STABILITY, AND THE SECURITY INTERESTS OF THE UNITED STATES AND OTHER COUNTRIES." PRESIDENT REAGAN THEN REAFFIRMED THIS ADMINISTRATION'S COMMITMENT TO THE LONG-STANDING BIPARTISAN GOAL OF PREVENTING THE SPREAD OF NUCLEAR EXPLOSIVES TO OTHER COUNTRIES, A GOAL ALSO SHARED BY THE VAST MAJORITY OF THE WORLD'S NATIONS.

TO REALIZE THIS GOAL, WE HAVE BEEN PURSUING MANY OF THE SPECIFIC RECOMMENDATIONS CONTAINED IN SENATE RESOLUTION 179. THUS, THIS ADMINISTRATION'S FUNDAMENTAL COMMITMENT TO THE UNDERLYING GOAL OF NUCLEAR NONPROLIFERATION AND TO STRENGTHENING THE GLOBAL NONPROLIFERATION REGIME IS CLEAR; ITS READINESS TO WORK TO THAT END IS ATTESTED TO BY ACTIONS, MANY OF WHICH I HAVE DESCRIBED TODAY.

BUT IF WE ARE TO REALIZE OUR SHARED NONPROLIFERATION GOALS, WE ALSO NEED, MR. CHAIRMAN, TO RESTORE AND NURTURE THAT BASIC SPIRIT OF BIPARTISAN COOPERATION TO WHICH PRESIDENT REAGAN REFERRED. RATHER THAN ENGAGING IN CONTENTIOUS DISPUTE, THE EXECUTIVE BRANCH AND THE CONGRESS MUST WORK TOGETHER. TO THAT END, I REAFFIRM OUR READINESS TO CONSULT CLOSELY WITH YOU ON THE CRITICAL ISSUES AND CHOICES THAT LIE AHEAD.

COOPERATION ALSO IS NEEDED BETWEEN THE BRANCHES OF GOVERNMENT AND THE NUCLEAR INDUSTRY. WE IN THE EXECUTIVE BRANCH AND YOU IN THE CONGRESS NEED TO TAKE ACCOUNT OF THE LEGITIMATE CONCERNS OF THE NUCLEAR INDUSTRY AS WELL AS TO MAKE USE OF ITS READINESS TO CONTRIBUTE TO REALIZING OUR COMMON NONPROLIFERATION GOALS, PARTICULARLY IN STRENGTHENING SAFEGUARDS. BUT FOR ITS PART THE NUCLEAR INDUSTRY MUST WORK, AS DOES THIS ADMINISTRATION, WITHIN THE SPIRIT AS WELL AS THE LETTER OF EXISTING NUCLEAR LEGISLATION.

ABOVE ALL, A SPIRIT OF RESTORED COOPERATION IN THE NUCLEAR REALM IS REQUIRED WITH OTHER COUNTRIES. A UNILATERAL APPROACH WHICH TOO READILY OVERLOOKS THE PARTICULAR ENERGY NEEDS, SECURITY PERSPECTIVES, AND DOMESTIC POLITICAL REQUIREMENTS OF OTHER COUNTRIES MAKES OUR COMMON TASK MORE DIFFICULT. WE CANNOT DICTATE TO OTHER COUNTRIES; WE MUST CONVINCE THEM OF THE DESIRABILITY AND BENEFITS OF COOPERATING WITH US TO ENSURE THAT THE PEACEFUL USE OF NUCLEAR ENERGY DOES NOT LEAD TO FURTHER NUCLEAR EXPLOSIVES PROLIFERATION. FOR HERE TOO, FAILURE TO WORK TOGETHER CAN ONLY LEAD TO A BROADER FAILURE OF OUR NONPROLIFERATION POLICIES.

THANK YOU, MR. CHAIRMAN, AND I WELCOME THE COMMITTEE'S QUESTIONS.

Senator PERCY. Our next witness is Mr. Henry Thomas, Assistant Secretary for International Affairs, Department of Energy. Mr. Thomas is the DOE official charged with overall responsibility for the Department's role in international energy policy.

Mr. Thomas, you also are the key assistant secretary for nuclear proliferation issues. I believe you have one of the most important jobs in your department.

It is also good to see Mr. Harold Bengelsdorf, Director of the Office of International Nuclear Affairs, who I understand will soon be retiring. We will miss your expertise in this area.

I feel DOE has an important role to play in nonproliferation.

I am particularly concerned about the state of the international functions which would substantially affect our consideration of the proposal to eliminate DOE.

We look forward to your testimony.

TESTIMONY OF HENRY E. THOMAS, ASSISTANT SECRETARY FOR INTERNATIONAL AFFAIRS, DEPARTMENT OF ENERGY, ACCOMPANIED BY HAL BENGELSDORF, DIRECTOR OF THE OFFICE OF INTERNATIONAL NUCLEAR NONPROLIFERATION POLICY, AND JACK GRIFFIN, OFFICE OF INTERNATIONAL SECURITY AFFAIRS

Mr. THOMAS. Thank you, Mr. Chairman. It is indeed a pleasure to be here before you today. I am joined by Mr. Harold Bengelsdorf, Director of the Office of International Nuclear Nonproliferation Policy of the Department of Energy, and on my right, Jack Griffin, Office of International Security Affairs of the Department.

It is my understanding that the committee wants to review a number of nonproliferation matters of current interest. Perhaps more importantly, you are interested in learning how the key executive branch agencies are organizing themselves to deal with the subject and you wish to be reassured that the pursuit of nonproliferation objectives and values will continue to be given high priority in the conduct of international nuclear activities

For my part, I am here on behalf of DOE to assure you that we take this subject very seriously and that we will continue to give it very serious attention as we plan our reorganization.

In his presentation, Under Secretary Kennedy provided you with an extensive overview of how President Reagan's administration is approaching the issue of nonproliferation. He also sought to address some of the specific issues and concerns that have recently been expressed by the committee.

I find it difficult to improve on or amplify what has been said but I would like to supplement Mr. Kennedy's remarks by offering a few points that I believe merit emphasis.

To begin with, I believe that the Reagan administration is making good progress in restoring confidence in the United States as a nuclear partner with the West Europeans, Japan, and other nations. This is being done not so much by rhetoric but by the way we are addressing specific issues on a case-by-case basis; and by the fact that we are trying to exercise the consent rights in our agreements in a more timely and predictable way.

We have sought to emphasize to the West Europeans and Japanese that we are not hostile to their nuclear power reprocessing and breeder programs and that we understand that they believe these activities play a vital role in their domestic energy programs.

At the same time, we stressed that we wish to assure that sensitive materials and technologies are strictly controlled and particularly kept away from sensitive and unstable regions and that we will need and expect the cooperation of the advanced nations to help preserve these controls.

I believe we are rebuilding trust in our relationships with Japan and Europe but, frankly, we still have a way to go to relax tensions and to build a new international consensus.

The fact of the matter is that some of the abrupt changes in export policy that were adopted by the previous administration created serious doubts in the minds of several nations as to our reliability and predictability as a nuclear supplier and partner. This, in turn, has aggravated the already-present tendencies of some consuming nations to turn to other nations for their needs for nuclear fuel and equipment.

It is inevitable that when such developments occur our influence in global nuclear affairs is lessened.

It is against this background of diminished confidence in the United States that I believe we need to assess current proposals for executive branch actions or congressional proposals for legislative change.

In particular, I believe it is vitally important that the United States continue its current process of building bridges with the West Germans, Japanese, and others; that, for example, we strive for a long-term solution with the Japanese on the reprocessing of U.S. controlled fuels; and that we grant our approvals and export licenses as expeditiously as possible, in accordance with our law and regulations, so as to demonstrate our good faith. I also think it is vital that we be able to assure nations like Mexico and Yugoslavia that, consistent with our nonproliferation objectives, we are ready to work with them closely in the development of their nuclear power programs.

For similar reasons, and for the reasons cited by Mr. Kennedy, we feel that it is important to strive for stability in our relations with our principal nuclear trading partners and that we should avoid any further unilateral changes governing the basic ground rules in U.S. nuclear supply.

We have come to learn to live with the NNPA and we believe it can be carried out in a manner that will help restore confidence in our supply relations. We do not intend to propose changes in the law this time.

We also are opposed to proposals that have surfaced elsewhere in the Congress for changing the NNPA. For example, one proposal that has been tabled in the House of Representatives would further modify the Non-Proliferation Act of 1978 by placing new conditions on the transfer of unclassified technology, by cutting off the export of highly enriched uranium, and by subjecting several types of subsequent arrangements to lengthy congressional review and a legislative veto.

In addition to our belief that aspects of this legislation are unconstitutional, passage of this kind of bill would send a highly unwelcome signal to many other nations. They undoubtedly would conclude that

U.S. nuclear export policies still have not stabilized, that we are still prone to make unilateral changes, and that our protestations favoring reliability of supply are rhetoric rather than reality. I, therefore, believe passage of the kind of legislation that has surfaced in the House would be seriously harmful to U.S. international nonproliferation and nuclear objectives at this time and that the alleged benefits would not be worth the cost.

This leads me to my next point. The key to an effective U.S. nonproliferation policy depends, in my view and as Mr. Kennedy has noted in his testimony, on a strong body of bipartisan support that will be essential if we are to have consistency in our policy directions in this area. I believe that it is absolutely vital that both the Congress and the executive branch work together to achieve this objective.

With these general observations, I should now like to discuss in more detail DOE's role in the process so as to emphasize the importance that we ascribe to the subject. Our involvement is many faceted and I would expect it to continue in an appropriate form.

First, as you know, we are the agency primarily concerned with development of peaceful reactor technology, with the development of the nuclear fuel cycle, and with the provision of enrichment services to domestic and foreign consumers. Under the terms of the Non-Proliferation Act, we are expected to share our advances in the peaceful utilization of atomic energy with other nations to the extent permitted by the national security. Moreover, there are strong admonitions in the law that we should do what we can to assure that the United States remains a reliable supplier of nuclear equipment and fuel to nations that adhere to effective nonproliferation policies.

We in DOE take these responsibilities seriously and believe that active U.S. involvement as a reliable supplier is vital to the achievement of our nonproliferation and foreign policy objectives. Our heavy involvement in these areas necessarily makes us a close partner with the Department of State in the negotiation of agreements for cooperation as well as detailed technical exchange arrangements.

Second, DOE is the lead executive branch agency in processing the so-called subsequent arrangements under the Nuclear Non-Proliferation Act. As such, I anticipate that our agency or its successor will play a major role in continuing to work with the Department of State in the development and implementation of the administration's foreign reprocessing and plutonium policies and we will continue to be closely involved in negotiations on such matters as the future of Tokai-Mura and efforts to assure our close nuclear partners that our consent rights will be administered on a more predictable long-term basis.

Third, DOE also has an important role in the area of nuclear exports. DOE has statutory responsibility under section 57.b.(2) of the Atomic Energy Act to make the noninimical determination with regard to certain specified nuclear activities. This determination has to have the concurrence of the Department of State. Section 57.b.(2) is implemented by DOE regulations 10 CFR Part 810. Recently, the adequacy of the coverage of these regulations has been questioned. In part because of this concern, DOE has initiated an interagency review of part 810 to determine if changes are needed to improve control over

exports of technology or providing assistance to countries of proliferation concern.

As Under Secretary Kennedy stated, one of the areas under review is the general authorization in part 810 that permits U.S. persons to provide unclassified, nonsensitive nuclear-related assistance to any country not identified in part 810 as being prohibited.

In addition, DOE participates in reviewing Commerce and NRC export applications and COCOM cases as well as serving as a member on the State-chaired Subgroup on Nuclear Export Coordination which reviews exports involving nonproliferation matters.

As a fourth major responsibility, DOE has been actively concerned with the provision of technical support and assistance to the IAEA overall, and with R&D aimed specifically at improving IAEA safeguards. In recent months there has been considerable criticism of certain aspects of the IAEA safeguards system. Frequently, the critics maintain that plutonium cannot be safeguarded and that, hence, certain types of supply activities should not be allowed to occur in international commerce.

I have been concerned that these tendencies tend to ignore the realities that plutonium and related bulk handling facilities are already present or planned in several countries, the fact that the safeguards system is an evolutionary one. The fact that we simply must improve IAEA's capabilities and resources to deal with the problem is a fact of life with which we live.

At the same time, we have to recognize the limitations of the IAEA safeguards system and avoid the danger of relying on safeguards alone for achieving our nonproliferation objectives. Instead, any credible U.S. nonproliferation policy must rely on a battery of measures including political prudence in selecting partners, export controls, consent rights, limits on sensitive transfers, and intelligence, as well as safeguards.

This leads to my final point. Through its national laboratories and the technical programs division, DOE is actively involved with strengthening U.S. intelligence capabilities in the nonproliferation area and we are frequently called upon to help evaluate data and put it in the correct technical perspective.

My objective in going through this brief review of DOE's activities and responsibilities is to underscore that the concern with international nuclear affairs and nonproliferation is a pervasive one throughout our agency and this is not a matter that has been relegated to a back corner. On the contrary, there is a widespread as well as very high-level interest in the subject.

I expect this broad degree of commitment to continue in the months ahead, regardless of how the dust settles on the overall issue of reorganization.

Before I conclude my prepared remarks for you, I would like to comment on your opening statement with regard to the imminent departure from Federal service of the gentleman to my left, Harold Bengelsdorf. He has been involved in nuclear nonproliferation matters for many, many years. On occasion he has suggested, I think, perhaps too many years. This may be the last occasion in which he appears before your committee, Mr. Chairman, as a witness for the Government

but I certainly hope in that context it is not the last appearance he will make before the nonproliferation community.

He has left a legacy behind him of great proportion. I am pleased to be able to say in consonance with Secretary Kennedy's remarks that the community of those in the Government who deal with this very sensitive subject is quite small. It is also somewhat incestuous. Many of the individuals who have learned, as it were, at Mr. Bengelsdorf's feet are well ensconced in several of the Departments of Government.

He leaves behind him in the Department of Energy a first-rate team trained by him, and I am sure that team will continue to provide the interest and dedication that he has given to the subject.

That completes my remarks, Mr. Chairman. I will be happy to answer any questions.

Senator PERCY. Thank you very much. I certainly join you in your commendation of Mr. Bengelsdorf. He has earned it. We highly respect him in the field.

Mr. Thomas, in your statement and in response to questions, you can give us precise answers and we will keep the record open for you to expand on any of them that you wish. In your statement you explain how your Office of International Affairs has very substantial responsibilities in seeing to the activities of State, Commerce, and other agencies involved in nuclear proliferation issues.

Could you tell us what the budget is for next year for your office?

Mr. THOMAS. The budget next year is $400,000 as it is constituted in the budget presented by the President. I should add that that budget was in anticipation of legislation being submitted dealing with the reorganization of the Department. I have had discussions on this subject both with Secretary Edwards and extensive discussions with Deputy Secretary Davis.

These discussions have carried over with Department of Commerce officials, the future owners, as it were, of most of the responsibilities of the Department, at the Secretary and Deputy Secretary level.

Mr. Chairman, I am assured and I feel comfortable that at such time as the reorganization proposal is submitted to the Congress and is favorably acted upon by the Congress that the necessary responsibilities of my office will be fully carried out in the Department of Commerce. In particular, sir, the subject of nonproliferation responsibility was addressed specifically at the Secretary and Deputy Secretary of Commerce. I feel comfortable in assuring you, sir, that appropriate budgetary considerations would be provided for to assure the continuation of these responsibilities should such legislation be enacted.

Senator PERCY. But as of now what is your position ceiling for next year?

Mr. THOMAS. The position ceiling is constant with the proposal of the President which presumes a shift of responsibilities to the Department of Commerce. Accordingly, the Office of International Affairs itself would cease to exist as an entity. The functions, however, sir, would be continued in the Department of Commerce and supplementary resources would be requested in that legislation coming forward that would support these responsibilities.

Senator PERCY. If you have no really adequate budget for that purpose who would actually be giving this kind of technical advice next year?

11-269 O - 83 - 5

Mr. THOMAS. I think we have two issues here. One, the administration's budget submissions to the Congress presumed legislation bringing responsibilities of the Department of Energy largely into the Department of Commerce or before the Congress. If such reorganization legislation is not submitted and enacted by the Congress, Mr. Chairman, it is my understanding that supplementary funds for the Department, and hence positions, will have to be requested of the Congress and that would include my responsibilities as well.

Senator PERCY. You talked about plutonium. Do you agree that the world would be a safer place if there were less separated plutonium around?

Mr. THOMAS. I think that would be a very difficult statement to quarrel with at the moment. I think the question in its larger context of course is to what use will that separated plutonium be put. Certainly one can look toward the future where, indeed, there is a very real use for plutonium in a civil nuclear power program.

The question which I am sure the chairman is directing himself to, and hence toward which my response is directed, concerns plutonium that isn't where we would all like to see it, that is, in appropriate civil nuclear power programs under effective controls and international safeguards.

Senator PERCY. If we agree on the premise that the world would be better off if there were less of it around, do you share my concern that we are not doing enough to restrain the use of plutonium fuels overseas? I am not suggesting we attempt unilaterally to ban their use. That is probably impossible. But I think we should be doing whatever we can to slow the use of plutonium.

What is DOE doing in this regard to restrain plutonium use?

Mr. THOMAS. I am not so sure, Mr. Chairman, that our policy is one of, per se, restraining the use of plutonium in the broadest possible context. Rather, we would want to assure that plutonium, when it is used, is used in a safeguard environment subject to appropriate constraints and controls which we and our colleagues in the major nuclear supplier countries apply.

We want to be sure that plutonium, when it is used, is used in civil nuclear power programs under appropriate controls and not diverted for our unwarranted and inappropriate uses.

Senator PERCY. If it is a dangerous material to have around, the world would be better off if we weren't using it. What are we doing with the policy to slow its usage, discourage its usage? Is that a policy of the Department of Energy?

Mr. THOMAS. I think it is safe to say, Mr. Chairman, that plutonium economy obviously is not yet here, and when it does come into being its scope should be an extremely limited one as well. It would call for quite sophisticated technology.

The environment in which we would see it used would be under strict controls including effective international safeguards. We do not want to see the proliferation of plutonium use and I think the policies of this administration are supportive of this objective.

Senator PERCY. Yesterday we had testimony in the Foreign Relations Committee from the founder of Ground Zero. We also had former directors of ACDA testifying. The concern they have expressed is shared by my citizenry in Illinois. I have never attended such an

emotional and heated meeting on the North Shore of Chicago as we had on nuclear proliferation. It is a subject that is suddenly on the minds and tongues of everyone. What can I do when I go back there to tell people what we are doing now about nuclear nonproliferation? How active is our Government? What leadership role are we assuming? What specific things can I say that we are doing to stop the spread of plutonium around the world, for instance, as one of the many things that can be done to be an active leader in nonproliferation?

Mr. THOMAS. I would like to, in response to your question, Mr. Chairman, echo some of the statements made by Secretary Kennedy. The nature of our efforts to control proliferation, movement of materials, technology, and sensitive components is one which we have endeavored to deal with on a low-key, nonpublic, but by the same token very aggressive and diplomatic approach.

I would share Mr. Kennedy's view that perhaps we should further consider providing not only to you, but to the audience to whom you would be speaking, the public at large, a better understanding of what we have been doing and what we are now engaged in, to assure you that our nonproliferation policies are pursued with great vigor.

I would like to consider your question a little bit more outside of the context of this hearing and provide you a considered response which, hopefully, would be useful in your dealing with the general public on this question, Mr. Chairman.

Senator PERCY. I think that would be helpful. I think we would all appreciate that very much indeed.

[A letter to Senator Percy from Mr. Thomas follows:]

DEPARTMENT OF ENERGY,
Washington, D.C., July 7, 1982.

Hon. CHARLES PERCY,
U.S. Senate,
Washington, D.C.

DEAR SENATOR PERCY: This letter is in response to the concern you raised during the May 13 non-proliferation policy hearings regarding the need for more effective communication to the public on US efforts to prevent the spread of nuclear weapons. You stated that the Administration needs to dramatize more convincingly that it regards the proliferation problem as an urgent one, that it is involved in serious efforts to deal with it, and that the US continues to play a leadership role in international non-proliferation activities.

I fully share both your view of the perception of the proliferation threat and your feeling that the public should have every reason for confidence that the US is doing all it can to respond to this threat. It would be unfortunate and mistaken for the public to gain the impression that non-proliferation has been given a lower priority by this Administration, and I very much hope that the testimony you heard from Ambassador Kennedy and me on May 13 made clear that this is not the case. As we pointed out, the US is currently engaged in intensive efforts on a variety of fronts to prevent proliferation.

These efforts reflect a strategy of non-proliferation that emphasizes a combination of technical measures to restrict the spread of weapons capabilities and diplomatic and political-military initiatives to deal with underlying incentives for proliferation. Hence, as we stressed before your committee, we will continue to inhibit transfers of sensitive technologies, facilities and materials, particularly where there is danger of proliferation. It is clear, however, that to be effective this strategy must be pursued cooperatively with other supplier states. As a result, a good deal of our non-proliferation activity necessarily involves confidential diplomatic consultations and exchanges with other governments. As you of course appreciate, the details of such efforts cannot be given high public visibility without prejudicing the support of countries whose cooperation is needed.

Similarly, the information gathering and assessment process that provides important support to these efforts, and gives us an early warning capability with regard to proliferation developments, frequently involves sensitive diplomatic and intelligence channels. I regard this assessment function as a particularly crucial element of our non-proliferation policy, which should be strengthened and upgraded.

In addition, U.S. policy includes the building of political support for the institutions of the non-proliferation regime, particularly the Non-Proliferation Treaty and the IAEA safeguards systems, as well as broader attempts to reduce security concerns that may prompt some countries to seek a nuclear option. These are essentially incremental attempts to shape the international environment in ways that ward off future proliferation, rather than specific, dramatic actions with immediate payoffs.

Nevertheless, I want to emphasize that I share your concern about public awareness of Administration non-proliferation efforts. While recognizing that much must be done that cannot be done publicly, I believe that the basic principles of our policy, and the strength of our commitment to non-proliferation, should continue to be given prominence by Administration spokesmen in their dealings with the public and the media. Let me also say that the efforts of you and others in the Senate to give visibility to the non-proliferation problem are appreciated by the Administration. Please let me know if we in DOE can be of assistance to you in these efforts.

Sincerely,

HENRY E. THOMAS,
Assistant Secretary for International Affairs.

Senator PERCY. I will see that other members of the committee and the Foreign Relations Committee are supplied with the information.

You may recall the last time you testified before this subcommittee you spoke out in defense of the laser isotope separation technology which in the view of many would ultimately turn any nuclear powerplant in the world into a factory making material for a nuclear bomb. For this hearing I introduced S. 1812 to restrict this technology and prevent the use of commercial spent fuel for nuclear weapons. In my view the bill served as something of a litmus test showing the depth of everyone's concern about nuclear proliferation.

If I am not mistaken, I believe you opposed it. Is that correct?

Mr. THOMAS. Yes, Mr. Chairman, I did.

Senator PERCY. So did Assistant Secretary Malone on behalf of the State Department. The Senate, on March 30, passed an even tougher bill than originally proposed and it did so by a margin of 88 to 9. How do you explain this vote? How do you explain the administration's position? I guess people knew they were voting against the administration when they voted for that bill.

I have got a pretty good record on supporting the administration through the past year. But is this a sign that the Congress is taking a much tougher attitude toward nuclear proliferation than the administration is?

Mr. THOMAS. Mr. Chairman, I do not consider it appropriate for me as a witness to suggest the rationale behind the votes taken in the Congress of the United States. Occasionally I may do that privately, but I have not often found that there is universal agreement on why the Congress does what it does. Therefore, I think you would be in a better position than I to suggest the rationale behind the vote to which you have just referred.

When Assistant Secretary Malone and I appeared before you before in reference to this particular legislation, we suggested that we felt that the necessary controls, safeguards, regulations, and authority already existed for full congressional oversight of U.S. nuclear pro-

grams, particularly those activities undertaken by the executive branch of the Government.

I continue to hold to that view. It may be that the views of the Congress and the administration differ on this matter.

Some of us down at the other end of the street notice from time to time that we do not agree on all things.

Senator PERCY. I have one last question.

The last question is the same question I put before to Secretary Kennedy on the export of helium-3.

Secretary Kennedy said that the use of helium-3 by South Africa for a thermonuclear device is highly unlikely. I have long since learned in dealing with foreign governments for 30 years that we are not always particularly accurate in what they are going to do under certain sets of circumstances.

I cannot predict what our own Government is going to do. I can't predict what the Senate is going to do this afternoon on a lot of amendments.

I hate to have, in a case like this, just faith, when they won't sign the NPT. What is your own position and feeling about the shipment of helium-3 to South Africa that is under consideration now? What will your recommendation be, given their noncompliance? Do we want to have a lot of blind faith that it is unlikely that they would use it? We are shipping weapon material to a country that refuses to sign the NPT and has consistently refused since they said in 1976 they would seriously consider it in the next few months. They are not going to sign it. They haven't even looked like they are close to it.

Mr. THOMAS. Mr. Chairman, I am pleased to see that I am not the only one that has not felt too comfortable on predicting the future and later looking back to find out that the future didn't turn out to be quite what we had predicted. I certainly think that this is relevant to considerations dealing with proliferation matters.

We have spent an awful lot of time, Mr. Chairman, in my office, considering questions of the kind you posed to Mr. Kennedy with respect to Argentina, an area of particular interest and of concern to me with my responsibilities.

Looking toward South Africa, we share some of your concerns as well. Let us take the helium-3 question. Helium-3 itself, of course, is not a proliferation problem. Our understanding and as we indicated to you in correspondence which you received, is that the South Africans are seeking a supply of helium-3 to carry out experiments bearing on the safety of a nuclear reactor undergoing a rapid power excursion.

These experiments, legitimate experiments, in our view, require that a reactor fuel be placed in the high flux region of a research reactor and surrounded by sufficient shielding to attenuate the flux to a low level. The shielding is then rapidly withdrawn, exposing the fuel to a rapidly rising neutron flux. Reversing this procedure can simulate a very rapid shutdown.

Controlled experiments of this type are in fact being conducted in Sweden and used by the reactor development community to determine structural integrity of fuel elements under transient conditions. Therefore, we are familiar with the phenomena and the type of experiment which the South Africans would propose to be done.

A neutron absorbing gas, withdrawn or inserted at a readily controllable rate, can provide the variable shielding needed to produce a well-characterized flux excursion at the location of the fuel pin. I recognize that this is a somewhat technical presentation, but I felt the question permitted at least something of a response of a substantive nature in this public forum.

Helium-3, of course, is not the only substance that exhibits high neutron absorption. It is however, the only gas with the required nuclear and chemical properties which exhibit certain of the principal characteristics here, notably high neutron absorption. However, in absorbing a neutron and out of the helium-3 produces one atom of tritium together with an atom of ordinary hydrogen. Therefore, proliferation concerns regarding helium-3 could stem either from its possible direct use in a device, for example, or its potential as a feed material for breeding of tritium.

The problem, and we address this in considerable detail in our letter to you, was that the production of significant quantities of tritium from helium-3 while theoretically possible does not appear desirable although for reasons of technical difficulty and the availability, frankly, Mr. Chairman, of much more suitable alternatives.

The fact that helium is a gas which is a virtue for the South African experiment, means that helium can only be introduced in large quantities in the production reactor by operating at very high pressure.

Large amounts of helium-3 installed in the reactor in such a way that all the helium is exposed to a high neutron flux will strongly influence the reactor criticality.

[The following was received subsequent to the hearing:]

Should the high pressure system fail and He-3 be released, the reactor would very rapidly go highly supercritical, and a serious accident could result. Beyond questions of safety, the tritium produced by irradiation of He-3 is diluted with an equal volume of ordinary hydrogen, which can only be removed by isotopic separation. For these reasons, together with the limited availability of He-3, the preferred method for production of tritium is by neutron irradiation of lithium. Introduced into the reactor as a solid, and therefore at a high atom density, the tritium produced by neutron capture in Li-6 is accompanied by ordinary helium He-4, readily separable from the tritium.

It is worth emphasizing, Mr. Chairman, that whether tritium is produced from helium-3 feed or from abundant lithium, the production rate is controlled by the availability of neutrons. Low-power research reactors do not have the capacity to produce significant amounts of tritium from either He-3 or lithium.

Senator PERCY. I wonder, Mr. Thomas, in the interest of time, possibly, if we can incorporate the rest of the written material in the record.

[The information follows:]

An application for the export of 710 liters of He-3 for reactor research use by the South African Atomic Energy Board in its Safari research reactor was referred to the Executive Branch Sub-Group on Nuclear Export Coordination (SNEC) for review on February 26, 1982. After a thorough review it was the conclusion of the SNEC that if South Africa attempted reconversion of the He-3 to tritium using the Safari reactor the production rate would at best be less than one gram per year. Conversion in larger power-producing reactors would face the safety and other problems we have discussed above. It was also concluded that, given the abundance of lithium available within South Africa, there would be little technical or economic incentive for the South Africans to divert He-3 to the production of tritium.

Senator PERCY. Just one thing I would like to comment on. Helium-3, can it make tritium?

Mr. THOMAS. The answer is quite clear. Yes, it can.

Senator PERCY. Can tritium be used in a bomb?

Mr. THOMAS. I think you can certainly suggest that tritium has been addressed as something that can be used in nuclear devices.

Senator PERCY. It can be used in a bomb.

Thank you very much indeed We will keep the record open for any additional materials you may wish to incorporate.

Do you have anything to add, Mr. Griffin, or Mr. Bengelsdorf? This is your last appearance before a congressional committee, isn't it?

Mr. BENGELSDORF. Yes.

Senator PERCY. Do you want to give a benediction? [Laughter.]

Mr. BENGELSDORF. I really don't. I would thank Mr. Thomas for his kind remarks and underscore that I commend the committee for its continued efforts to see that this subject gets the high priority that it deserves. I have the confidence that with your help this goal will be achieved.

Senator PERCY. I thank you.

If it is any comfort to you, I have noticed that people like Bill Colby, who testified before us after serving 3 years as Director of CIA, and others, like Paul Warnke, seem to be able to accomplish even more when they are out. Harold Brown is another example. They speak with greater freedom and less restraints than they could before.

So we might look forward to you coming before us again sometime after you have had a chance to reflect on the problems you faced here, the problems which we are still facing. We want to commend you very much indeed on your outstanding service and wish you well in whatever you do.

Mr. THOMAS. We appreciate the opportunity to appear before you. The statement was long with regard to tritium. I hope that is indicative to you that we look at these matters very closely.

The second point is that in the previous hearing, which I attended, you raised some substantive questions about possible transfers of materials from the United Kingdom to the United States.

It was a question associated with plutonium at that time. For the record, Mr. Chairman, I would like to submit a rather substantial response to that point because we have been in further discussions with the United Kingdom on this matter. I think it will clarify that issue quite completely.

Senator PERCY. How long is it?

Mr. THOMAS. It will be a couple of pages. We will present that for the written record.

Senator PERCY. We will incorporate it in the record at this point.

[The information referred to follows:]

The Department of Energy has been evaluating various ways in which the plutonium needs of our fast breeder reactor program can best be met, taking into account available domestic as well as possible foreign sources. In the process of our review, we are considering the merits of acquiring some plutonium from friendly foreign countries, including the United Kingdom, but no negotiations or detailed discussions on this matter have been initiated. Neither have we asked the United Kingdom to make such material available.

Quite obviously, if we acquired some plutonium from a foreign supplier such as the United Kingdom, we would have to abide by the export conditions of the supplier.

The British Government has indicated in the House of Commons that, in principle, it is prepared to approve the export of civil plutonium to the United States for the U.S. civil breeder reactor program subject to an appropriate exchange of letters between governments. In particular, the United Kingdom also has made it clear that any such plutonium that might be provided to the United States would have to be used exclusively for civil purposes and would, therefore, have to be subject to international safeguards. For our part, we anticipate that such use would be in accordance with the voluntary safeguards agreement that the United States has in effect with the IAEA.

We have no intention of relying on external sources of supply to meet our military demands which have, by law, first call on U.S. DOE plutonium production. It is therefore erroneous to suggest that importing civil plutonium for our civil program would free other U.S. plutonium for military use. Thus, if any United Kingdom or other foreign civil plutonium is acquired, it would be acquired solely for civil purposes and to help provide absolute assurance that the schedule of a peaceful program—namely, the breeder—is not affected by the availability of plutonium.

Senator PERCY. Thank you, very much, indeed. We appreciate your appearance today.

Our final witness is Dr. Ronald Lehman, Deputy Assistant Secretary of Defense, whose current responsibilities include policies on strategic nuclear forces as well as nuclear proliferation.

He served in a variety of positions here in the Senate, particularly on the staff of the Armed Services Committee.

We look forward to your testimony.

TESTIMONY OF RONALD F. LEHMAN II, DEPUTY ASSISTANT SECRETARY OF DEFENSE, STRATEGIC AND THEATRE NUCLEAR FORCES, DEPARTMENT OF DEFENSE

Mr. LEHMAN. Mr. Chairman, thank you, very much.

Senator PERCY. Your testimony will run about how long?

Mr. LEHMAN. Mr. Chairman, I am at your disposal. I can summarize it very quickly and make myself available for questions.

Senator PERCY. Fine.

Mr. LEHMAN. Thank you, very much.

Mr. Bengelsdorf is making his last formal presentation before this committee. I am making my first.

I think I have the close working relationship with your staff and the staff of many of the other members of the Senate over the years and I hope to keep that relationship going, especially on this issue which is of such great importance to the Department of Defense.

Other witnesses have talked at length about our policies and programs and decisionmaking processes and our priorities.

Let me get to the heart of the matter; that is, why the Department of Defense believes it has such an important role to play in the question of nuclear proliferation matters.

I want to assure you there is no dissent whatsoever within the Department of Defense on the fundamental national security implications of the proliferation of nuclear weapons, not only does nuclear proliferation pose a serious threat to the U.S. interests, allies and forces overseas, but conceivably it could pose a direct threat to the home land of the United States itself.

Moreover, even if proliferators have the most friendly intentions with respect to the United States, the emergence of additional nuclear weapons states would have the most serious impact.

Indeed, fear that a neighboring rival might some day acquire nuclear weapons undoubtedly already influences the international behavior of nations in several troubled regions of the world. Thus concern over nuclear proliferation issues is an integral aspect of the widest range of national security decisions in which the Defense Department takes part.

In short, we believe our policy is prevention and we endorse that policy and support it to the ultimate.

We believe very strongly that nuclear proliferation at heart is a national security issue. We therefore believe and indeed I believe that I have a mandate from the highest levels of the Department of Defense to insure that nuclear proliferation issues are considered most carefully within the Pentagon itself and in the interagency process.

That mandate has been made very clear to me.

Thank you, very much, Mr. Chairman.

Senator PERCY. Thank you, Dr. Lehman, very much indeed.

Today, the Senate is continuing consideration of the DOD authorization bill for fiscal year 1983. Most likely it will be put over until next week again. It is a long tortuous road. I think we totaled something like 30 amendments being considered.

We will spend a record amount of money on defense next year to maintain our national security. While the further spread of nuclear weapons is dangerous to the world as a whole, I am also concerned about its effect on our own security.

Would the United States be any less or more secure in the world with, for example, 10 or 15 nuclear weapons states? What would we have to do differently than we are doing right now to prevent nuclear expansion to that extent, proliferating the horror and the danger?

What kind of a world would our children and grandchildren be looking to then?

Sitting right at that table, Dr. Lilienthal, the first Chairman of the Atomic Energy Commission, said, "Senator, I am glad I am as old as I am. I wouldn't want to be the age of my grandchildren and children." I cannot find a Senator among my colleagues who in any way with any assurance would say within the next 25 years we are not going to have some sort of nuclear exchange and holocaust the way things are now going.

What do we have to do differently than we are doing now?

Mr. LEHMAN. Mr. Chairman, I think it is the policy of this administration to learn from the mistakes of the past and try to make sure that we continue those policies which have been sound and add to them the lessons of the past.

It is our view that we have to be a greater and more effective participant in the international nuclear discussions. It is our view that at the heart of nuclear proliferation are questions such as the regional security concerns of the potential proliferators, and we recognize their security concerns. We understand that these are very complex issues that must be dealt with often by bilateral negotiations, sometimes multilateral negotiations, and sometimes by just firm policies.

The Department of Defense supports that kind of approach. We want the most effective nuclear proliferation policy possible to prevent the spreading of the new weapons.

Senator PERCY. You are unique in that you have been on both sides of the aisle here, the executive branch and the Congress. Why don't I leave the record open in case you have reflections on your way home, or over the weekend.

We have written a bill. It has been in effect for a number of years. We don't think our bill is very effective. We have asked the Department of State to give us suggestions for changing it. What can we do? What can we do more than we are now doing? They come back and say they are not recommending any changes, which pleases me in a sense. Maybe we were more comprehensive and thorough than we thought we were at the time. But there must be something more we could do. We are spending billions, hundreds of billions of dollars to keep the peace today, mostly to try to deter the Soviet Union.

Just as I said to Prime Minister Gandhi, you are going to blow your own protective cover, which you have in conventional weaponry, with infinite superiority over the Pakistanis, once you encourage them and strengthen them in their resolve to get a nuclear bomb. So, too, as we add five or six other countries to the nuclear club, how much are we going to have to spend on our defense to protect ourselves against some sort of an accident, some sort of a demented person getting their hands on a bomb, terrorists? How do we defend ourselves? Can we defend ourselves against that kind of terror? How would you answer that?

Mr. LEHMAN. Mr. Chairman, I think we agree completely that a world in which there are a large number of nuclear weapons states is a less secure world. That would have an impact on how we view regions of the world, security in those areas. I think the greatest concern in proliferation is that we increase the chances of conflict, perhaps only conventional conflict, but conflict, nevertheless. We incorporate this in our planning. We take this into account. But clearly if proliferation were to continue, we would have to do more in this area.

Senator PERCY. How high a priority is nuclear nonproliferation in your judgment in the executive branch of Government today? How high do you think it is at DOD? How high is it at State? How high is it at the Energy Department?

Mr. LEHMAN. I think it is very high in all of those departments. With respect to my own organization, I would like to emphasize that as you know, the Under Secretary for Policy is a former Director of the Arms Control and Disarmament Agency, has very strong views on this matter. Those views are reflected at the higher levels and reflected at lower levels and I share those views. So in our organization concern over nuclear proliferation is very great. We intend to be as effective as possible on this issue.

Senator PERCY. I feel it is one of the highest priority items we have got to work on. We can deal with the immediately urgent and keep feeling that we are busy, pressing to do things, pressed to do things. But we are not dealing with the ultimately important if we simply do not close in on this issue. I am just delighted that the country is now aroused and alarmed and will be doing something about it, cause people in public life to do something about it.

I want to thank you, Dr. Lehman, and all of the witnesses for testifying today on the wide issue of nuclear nonproliferation. I think we have shown we just simply need to keep working on the problem. The consequences of failure are immense and irretrievable.

I am confident that the continued leadership of the United States can significantly slow, if not stop the spread of nuclear weapons. We just wouldn't be here today if we didn't think we could do something about this problem.

I thank you very much indeed for your presence today, for your patience and waiting through the morning. It is good to have you back on the Hill again.

Mr. LEHMAN. Thank you very much, Mr. Chairman.

Senator PERCY. Thank you very much.

[The prepared statement of Mr. Lehman follows:]

PREPARED STATEMENT OF RONALD F. LEHMAN II, DEPUTY ASSISTANT SECRETARY OF DEFENSE, STRATEGIC AND THEATRE NUCLEAR FORCES POLICY

On behalf of the Secretary of Defense I wish to thank you, Mr. Chairman, for the opportunity to appear before this distinguished subcommittee today. The April 15th letter of invitation to the Secretary stated the interest of the subcommittee members in several non-proliferation policy and management issues. The previous witnesses have summarized U.S. policy, priorities and decision making processes at some length. Rather than repeat what has been said already, let me simply share with you the Department of Defense's views on the importance of preventing further nuclear proliferation and explain why the Defense Department takes its role in that effort so seriously.

There is no dissent within the Department of Defense on the fundamental national security implications of the proliferation of nuclear weapons. Not only could nuclear proliferation pose a serious threat to U.S. interests, allies and forces overseas, but conceivably it could also pose a direct threat to the homeland of the United States itself. Moreover, even if they had the most friendly intentions with respect to the United States, the emergence of additional nuclear weapons states would have a most serious impact. Indeed fear that a neighboring rival might some day acquire nuclear weapons undoubtedly already influences the international behavior of nations in several troubled regions of the world. Thus, concern over nuclear proliferation issues is an integral aspect of the widest range of national security decisions in which the Defense Department takes part. A closer examination of the possible consequences of nuclear proliferation makes clear why this is so.

In most cases, nations likely to seek nuclear weapons are those which perceive severe military and political threats within their own regions—dangers these nations believe could well threaten their very survival. This presents us with the spectre of proliferation occurring in regions which already are characterized by fear, hatred, and potential instabilities. Nuclear weapons would likely further exacerbate the political and other conflicts which pose continuing risk of intra-regional military hostilities. In many cases, regional nuclear weapons arms races could be expected as a result of "catch-up" efforts among fearful neighbors. With nuclear weapons proliferation would also come increased risk of their being used. As we all understand, such weapons not only would vastly increase the lethality and horror of war but would bring long term devastation.

In many cases, the capabilities of new nuclear weapons states to deal adequately with the host of safety and security problems associated with the possession of nuclear weapons would, I believe, be quite limited. Extensive national scientific research and professional expertise is necessary just to assure that nuclear weapons can be manufactured, handled, stored and transported safely. Some nations which can "make a bomb" may not have such resources or may not be willing to apply them as fully as we have believed prudent. Moreover, some would not, in my judgment, be willing or able to provide adequate physical security from theft for their nuclear weapons or for their weapons materials and components. Also, an increase of nuclear weapons would, at a minimum, offer terrorists, internal opposition groups, political or religious fanatics additional and, in some cases, relatively attractive targets of opportunity.

The peaceful settlement of disputes has been a primary focus of U.S. diplomatic efforts and particularly where central U.S. interests are at stake, the prospect of regional conflict already presents major challenges for U.S. defense planners. In the Middle East, for example, the U.S. has vital economic interests, unambiguous commitments and a desire to maintain fruitful and enduring relations with

all of the nations there. Yet, international violence occurs periodically because the Nations of the Middle East have been barely able to manage their hostility, much less resolve fundamental differences. Nuclear proliferation in that situation could constitute a grave threat to U.S. interests.

Beyond the general dangers that an expansion of nuclear weapons states would clearly create, such a development would directly challenge U.S. national security. If new nuclear weapons states were to emerge which were hostile to the United States, American forces operating abroad might more likely become subject to attack, conventional or even nuclear. One of the presumed motivations for acquiring nuclear weapons is a weak state's perception that such weapons could be, for it, the greater equalizer, forcing states with overwhelming strength to deal with it more as a military equal. If a nation develops a nuclear capability for that purpose, there is a prospect of his using it. At a minimum, under such circumstances, U.S. military flexibility would be reduced and our decision makers would be burdened with the knowledge that in more and more cases our interest would have to be pursued in an environment of higher risk and higher stakes.

This country itself could become vulnerable to nuclear attack from new nuclear weapons states or even to possible nuclear terrorists. While the physical magnitude presented by such a threat could not approach that with which we already live, nuclear proliferation would increase risk. We would become the potential target of more decision makers, more international actors potentially driven by unpredictable hopes, anger, ambition, fear or ideologies.

I have elaborated on these issues to emphasize that the Department of Defense recognizes the general and specific national security threats which would be posed by further nuclear proliferation. With respect to our defense planning itself, it is our current assessment that these potential threats do not call for fundamental re-orientation or modification of U.S. military capabilities or doctrine. In a real sense, however, I would argue that these conclusions highlight rather than diminish the seriousness of nuclear weapons proliferation because they reaffirm that the United States focus must be, as it is, on prevention. If, as I and many believe, the principal or determining motivation that would ultimately impel a government to choose the nuclear weapons option is a real or perceived sense of insecurity, then U.S. military assistance and commitments to such states make an essential contribution to non-proliferation policy implementation.

The existence of those security relationships does give rise to the issue of the priority that non-proliferation has in our strategic view. It is inescapable that proliferation could present the U.S. with specific national security and foreign policy dilemmas, especially in those cases where we have established mutually beneficial bilateral relationships. But there should be no doubt that our relations with countries which chose the nuclear weapons course would be seriously compromised.

In sum, the United States has been and remains in the forefront of efforts to prevent the further proliferation of nuclear weapons as well as to try to negotiate controls on the nuclear arsenals which now exist. The Department of Defense is and will remain in strong support of these endeavors.

Senator PERCY. I would like to note for the record that Mr. Bo Denysyk, Deputy Assistant Secretary of Commerce, has a statement for the record.[1]

The subcommittee is adjourned.

[Whereupon, at 12:45 p.m., the subcommittee adjourned to reconvene subject to the call of the Chair.]

[1] See p. 80.

ADDITIONAL MATERIAL SUBMITTED FOR THE RECORD

WILLIAM V. ROTH, JR., DEL., CHAIRMAN
CHARLES H. PERCY, ILL.
TED STEVENS, ALASKA
CHARLES MC C. MATHIAS, JR., MD.
JOHN C. DANFORTH, MO.
WILLIAM S. COHEN, MAINE
DAVID DURENBERGER, MINN.
MACK MATTINGLY, GA.
WARREN B. RUDMAN, N.H.
JOHN M. MC ENTEE, STAFF DIRECTOR

THOMAS F. EAGLETON, MO.
HENRY M. JACKSON, WASH.
LAWTON CHILES, FLA.
SAM NUNN, GA.
JOHN GLENN, OHIO
JIM SASSER, TENN.
DAVID PRYOR, ARK.
CARL LEVIN, MICH.

CHARLES H. PERCY, ILL., CHAIRMAN
DAVID DURENBERGER, MINN.
WILLIAM S. COHEN, MAINE
MACK MATTINGLY, GA.

JOHN GLENN, OHIO
HENRY M. JACKSON, WASH.
CARL LEVIN, MICH.

WILLIAM A. STRAUSS
CHIEF COUNSEL AND STAFF DIRECTOR

United States Senate

COMMITTEE ON
GOVERNMENTAL AFFAIRS
SUBCOMMITTEE ON ENERGY, NUCLEAR
PROLIFERATION AND GOVERNMENT PROCESSES
WASHINGTON, D.C. 20510

April 23, 1982

The Honorable James B. Edwards
Secretary
Department of Energy
James Forrestal Building
Room 7A-257
1000 Independence Avenue, S.W.
Washington, D.C. 20585

Dear Secretary Edwards:

I understand that helium that is isotopically enriched in the helium-3 isotope is controlled for export because it has a use in the nuclear weapons program and can also be immediately reconverted to tritium. I would appreciate it if the Department of Energy would provide an explanation of the direct military uses of helium-3 as well as a description of what is required to reconvert it to tritium. It would be most helpful if you could prepare both an unclassified description and a more extensive classified response if a full explanation must contain restricted data.

The Subcommittee would like to have this information within five working days.

Thank you for your assistance.

Sincerely,

Charles H. Percy
United States Senator

CHP:cak

Department of Energy
Washington, D.C. 20585

May 11, 1982

Honorable Charles H. Percy
Chairman, Subcommittee on Energy, Nuclear
Proliferation, and Government Processes
United States Senate
Washington, D.C. 20510

Dear Senator Percy:

This letter responds to your questions pertaining to helium-3.

We are not aware of any current direct military uses for helium-3. Any future considerations must remain classified.

To reconvert helium-3 to tritium requires neutron irradiation of the helium-3 gas. Small amounts of the gas, enclosed in an aluminum container and exposed to flux levels available in research reactors, could be 50 percent reconverted to tritium in 20 to 200 days. The low power levels, typical of research reactors, would limit such tritium production to quite small quantities. Commercially available equipment can perform the isotopic separation required to remove hydrogen coproduced with the tritium.

Production of significant quantities of tritium for weapons purposes is done in high-power reactors involving lithium rather than helium-3 for the feed material.

We would be pleased to furnish any additional information, if desired.

Sincerely,

Guy W. Fiske
Under Secretary

cc:
Honorable John H. Glenn, Jr.
Ranking Minority Member
Subcommittee on Energy, Nuclear
Proliferation, and Government Processes

WILLIAM V. ROTH, JR., DEL., CHAIRMAN
CHARLES H. PERCY, ILL.
TED STEVENS, ALASKA
CHARLES MC C. MATHIAS, JR., MD.
JOHN C. DANFORTH, MO.
WILLIAM S. COHEN, MAINE
DAVID DURENBERGER, MINN.
WARREN B. RUDMAN, N.H.
JOHN M. MC GUIRE, STAFF DIRECTOR

THOMAS F. EAGLETON, MO.
HENRY M. JACKSON, WASH.
LAWTON CHILES, FLA.
SAM NUNN, GA.
JOHN GLENN, OHIO
JIM SASSER, TENN.
DAVID PRYOR, ARK.
CARL LEVIN, MICH.

CHARLES H. PERCY, ILL., CHAIRMAN
DAVID DURENBERGER, MINN.
WILLIAM S. COHEN, MAINE
MACK MATTINGLY, GA.

JOHN GLENN, OHIO
HENRY M. JACKSON, WASH.
CARL LEVIN, MICH.

WILLIAM A. STRAUSS
CHIEF COUNSEL AND STAFF DIRECTOR

United States Senate

COMMITTEE ON
GOVERNMENTAL AFFAIRS
SUBCOMMITTEE ON ENERGY, NUCLEAR
PROLIFERATION AND GOVERNMENT PROCESSES
WASHINGTON, D.C. 20510

April 29, 1982

The Honorable Malcolm Baldrige
Secretary of Commerce
Washington, D.C. 20230

Dear Mac:

I understand that the Department of Commerce has under consideration a license to export 95 grams of Helium-3 (He-3) to South Africa. I ask that you withhold approval of this license until the questions posed by this export can be examined at a hearing of the Subcommittee on Energy, Nuclear Proliferation, and Government Processes scheduled for May 13. Before the hearing, I would appreciate having answers to the following questions:

1. Can He-3 be used directly in a nuclear explosive device?

2. Can He-3 be used in any manner in a nuclear explosive?

3. If He-3 can be used in a nuclear explosive, what kind?

4. For what purpose does South Africa want He-3?

5. What assurances will the United States receive that this material will be put to use in the manner South Africa has stated?

6. What other nations use He-3 in their civil nuclear programs?

7. Are there alternatives to using He-3 in civil nuclear programs?

8. What statutory requirements are there for the export of nuclear materials like He-3?

9. What other nuclear materials fall under the same export requirements as He-3 and do any of these have a nuclear explosive application?

10. What is the United States' policy on nuclear cooperation with South Africa?

11. The U.S. has made full-scope safeguards and signature of the NPT a condition of further cooperation with South Africa's nuclear program. Does the export of He-3 represent a contradiction to and departure from this policy?

12. Please provide a list and a description of all nuclear end use materials and equipment shipped to South Africa under U.S. export licenses in the past 2 years.

Responses to these questions would be most useful to the Subcommittee in unclassified form. If a full answer must be classified, however, we would appreciate an unclassified summary of the response.

The Subcommittee would like responses to these questions at least forty-eight hours before the hearing.

Sincerely,

Charles H. Percy
Chairman

CHP:cak

cc: The Honorable Alexander Meigs Haig, Jr.
The Honorable James B. Edwards
The Honorable Eugene V. Rostow

THE SECRETARY OF COMMERCE
Washington, D.C. 20230

MAY 12 1982

Honorable Charles H. Percy
Chairman, Subcommittee on Energy, Nuclear
Proliferation, and Government Processes
Committee on Governmental Affairs
United States Senate
Washington, D.C. 20510

Dear Chuck,

Thank you for your letter concerning the proposed export of 95 grams of Helium-3 to the Atomic Energy Board of the Republic of South Africa.

Section 309(c) of the Nuclear Non-Proliferation Act of 1978 requires the Department of Commerce to control for nuclear nonproliferation reasons items that could be of significance for nuclear explosive purposes, if used for purposes other than for which the export is intended. The regulatory implementation of this section takes into consideration factors such as the status of the recipient country under the Non-Proliferation Treaty, the mechanisms available to ensure strict adherence to the stated end-use, and the ability of the recipient to ensure safe operation of its nuclear facilities.

I have requested the Secretary of Energy to respond to your first three questions due to the fact that nuclear explosive information is the responsibility of the Department of Energy. Enclosed are our responses to the other questions which you have raised. The information has been provided in both a confidential version and a non-confidential version, as you requested. The information furnished herewith is subject to the provisions of Section 12(c) of the Export Administration Act of 1979, 50 U.S.C. App. 2411(c), and its unauthorized disclosure is prohibited by law.

Sincerely,

Mac

Secretary of Commerce

Enclosure

11-269 O - 83 - 6

NON-CONFIDENTIAL VERSION
Responses to Questions on U.S. Nuclear Export Policy

1) Can He-3 be used directly in a nuclear explosive device?

2) Can He-3 be used in any manner in a nuclear explosive?

3) If He-3 can be used in a nuclear explosive, what kind?

(To be answered by the Secretary of Energy.)

4) For what purpose does South Africa want He-3?

Disclosure of this information is limited by the provisions of Section 12(c) of the Export Administration Act of 1979. It may only be released publicly if the full Committee determines that not doing so would be contrary to the national interest.

5) What assurances will the United States receive that this material will be put to use in the manner South Africa has stated?

The United States will require assurances that this material will be put to use in the manner that South Africa has stated.

6) What other nations use He-3 in their civil nuclear programs?

He-3 is used for safety-related testing activities in Sweden, Belgium, and France.

7) Are there alternatives to using He-3 in civil nuclear programs?

Because of its unique properties, He-3 has been selected for similar testing programs in a number of countries. As such, it is not clear that a viable replacement for He-3 could be found for this application.

8) What statutory requirements are there for the export of nuclear material like He-3?

Exports of certain materials like He-3 are controlled under the provisions of Part 378 of the Export Administration Regulations (EAR). These controls are administered by the Department of Commerce and apply to all commodities identified on the "Nulcear Referral List" as well as to any other item under Commerce jurisdiction of significance for nuclear explosive purposes which could be used for purposes other than for which the export is intended. Licensing procedures for these items are established pursuant to Section 309(c) of the Nuclear Non-Proliferation Act of 1978 and Section 17(d) of the Export Administration Act of 1979 and appear in Supplement 1 to Part 378 of the EAR.

9) What other nuclear materials fall under the same export requirements as He-3 and do any of these have a nuclear explosive application?

All materials identified on the "Nuclear Referral List", or materials which if used for other than the intended end-use could be used for nuclear explosive purposes, fall under the same export requirements as He-3. All commodities on the "Nuclear Referral List" have been idenitified as being of significance for nuclear explosive purposes. This list includes such items as certain computer equipment, specially designed compressors and blowers, nuclear reactor equipment, boron, certain radioisotopes, and others.

10) What is the United States' policy on nuclear cooperation with South Africa?

The United States' policy with respect to nuclear cooperation with South Africa continues to require adherence by the South African government to the Non-Proliferation Treaty and acceptance of full-scope safeguards as a condition to US supply of nuclear facilities and fuel controlled under the Atomic Energy Act. However, this Administration has adopted a more flexible policy with respect to approvals of exports of dual-use commodities and other materials and equipment which have nuclear-related uses in areas such as health and safety activities.

11) Does the export of He-3 represent a contradiction to and departure from this policy?

As indicated in the response to Question 10, this export, for use in nuclear safety-related testing, does not represent a contradiction to or departure from U.S. policy.

12) Please provide a list and a description of all nuclear end-use materials and equipment shipped to South Africa under U.S. export licenses in the past two years.

Since May 1980 the following equipment has been licensed for export to South Africa pursuant to the procedures described in the response to Question 8:

One (1) set of vibration test equipment
One (1) hot isostatic press
Nine (9) sets of computers or computer-related equipment
One (1) multi-channel analyzer
One (1) set of hydrogen recombiners

STATEMENT OF BO DENYSYK
DEPUTY ASSISTANT SECRETARY FOR EXPORT ADMINISTRATION
BEFORE THE SUBCOMMITTEE ON ENERGY, NUCLEAR PROLIFERATION
AND GOVERNMENT PROCESSES
OF THE
COMMITTEE ON GOVERNMENTAL AFFAIRS
UNITED STATES SENATE

May 13, 1982

Mr. Chairman, I am pleased to appear before the Subcommittee today to discuss the Department of Commerce's role in the control of exports for nuclear non-proliferation reasons.

This Administration's policy with regard to nuclear non-proliferation, as expressed by President Reagan in July 1981, states that it is a fundamental national security and foreign policy objective of the US to continue to seek to prevent the spread of nuclear explosives to additional countries. The U.S. seeks to work more effectively with other countries to reach agreement on reducing the risks of proliferation and continues to inhibit the transfer of sensitive nuclear equipment and technology when there is a danger of nuclear proliferation. The U.S. also endeavors to require International Atomic Energy Agency (IAEA) safeguards on all nuclear activities in a non-nuclear weapon state as a condition for any significant new supply commitments.

WHILE ACTIVELY WORKING TO REDUCE THE RISKS OF PROLIFERATION, IT IS ALSO THIS ADMINISTRATION'S DESIRE TO ESTABLISH THE UNITED STATES AS A RELIABLE SUPPLIER OF EQUIPMENT FOR PEACEFUL NUCLEAR USES UNDER ADEQUATE SAFEGUARDS. THE ADMINISTRATION WILL NOT INHIBIT OR SET BACK CIVIL REPROCESSING AND BREEDER REACTOR DEVELOPMENT ABROAD IN NATIONS WITH ADVANCED NUCLEAR POWER PROGRAMS WHERE THERE IS NOT A PROLIFERATION CONCERN.

IN IMPLEMENTING THIS POLICY THE DEPARTMENT OF COMMERCE CAREFULLY REVIEWS COMMODITIES AND RELATED TECHNICAL DATA UNDER ITS CONTROL THAT COULD BE OF SIGNIFICANCE FOR NUCLEAR EXPLOSIVE PURPOSES AND THAT COULD BE USED DIRECTLY OR INDIRECTLY FOR DESIGNING, DEVELOPING, FABRICATING, OR OPERATING SENSITIVE NUCLEAR FACILITIES SUCH AS URANIUM ENRICHMENT, THE PRODUCTION OF HEAVY WATER, THE SEPARATION OF ISOTOPES OF SOURCE AND SPECIAL NUCLEAR MATERIAL, AND THE FABRICATION OF NUCLEAR REACTOR FUEL CONTAINING PLUTONIUM.

IN REVIEWING NUCLEAR APPLICATIONS, AS REQUIRED BY THE EXPORT ADMINISTRATION ACT OF 1979, THE DEPARTMENT OF COMMERCE SPECIFICALLY TAKES INTO ACCOUNT:

1. THE STATED END USE OF THE COMPONENT;
2. THE SENSITIVITY OF THE PARTICULAR COMPONENT AND ITS AVAILABILITY ELSEWHERE;
3. THE TYPES OF ASSURANCES OR GUARANTEES GIVEN IN THE PARTICULAR CASE; AND
4. THE NONPROLIFERATION CREDENTIALS OF THE RECIPIENT COUNTRY.

THE CURRENT PROCEDURES TO IMPLEMENT SECTION 309(C) OF THE NUCLEAR NON-PROLIFERATION ACT OF 1978 (NNPA) WERE PUBLISHED IN THE FEDERAL REGISTER OF JUNE 9, 1978. THESE PROCEDURES PROVIDE COMMERCE THE CONTROL FOR ITEMS WHICH COULD BE OF SIGNIFICANCE FOR NUCLEAR WEAPONS PURPOSES IF USED IN A MANNER OTHER THAN THE STATED END-USE.

CONSULTATION, AS APPROPRIATE, WITH THE DEPARTMENTS OF ENERGY, STATE, DEFENSE, ARMS CONTROL AND DISARMAMENT AGENCY (ACDA) AND THE NUCLEAR REGULATORY COMMISSION IS REQUIRED BY THE NUCLEAR NON-PROLIFERATION ACT. A SUBGROUP ON NUCLEAR EXPORT COORDINATION (SNEC) CONSISTING OF THESE AGENCIES WAS SET UP UNDER THE DEPARTMENT OF STATE TO PROVIDE THE CONSULTATION FOR COMMERCE'S CASES AS WELL AS NUCLEAR EXPORTS OVERSEEN BY OTHER AGENCIES.

MR. CHAIRMAN, I WOULD LIKE TO GIVE THE SUBCOMMITTEE A QUICK SUMMARY OF REVIEW PROCEDURES FOR COMMERCE-CONTROLLED NUCLEAR RELATED EXPORTS. AS WE RECEIVE CASES, WE DETERMINE FIRST WHETHER NUCLEAR CONTROLS APPLY. SPECIAL NUCLEAR CONTROLS APPLY TO:

-- COMMODITIES (AND CERTAIN RELATED TECHNICAL DATA) ON THE "NUCLEAR REFERRAL LIST." THE LIST AT PRESENT COVERS COMMODITIES UNDER VALIDATED LICENSE THAT HAVE BEEN IDENTIFIED BY DOE AND ACDA AS HAVING POTENTIAL SIGNIFICANCE FOR NUCLEAR EXPLOSIVES OR FOR USE IN ONE OR MORE OF SENSITIVE NUCLEAR PROCESSES: CHEMICAL PROCESSING OF IRRADIATED URANIUM OR PLUTONIUM, PRODUCTION OF HEAVY WATER; SEPERATION OF ISOTOPES OF URANIUM; OR FABRICATION OF PLUTONIUM BEARING FUELS;

-- NON-LISTED ITEMS WHEN THE LICENSE APPLICATION SHOWS A NUCLEAR END-USE OR END-USER;

-- ITEMS NORMALLY EXPORTED UNDER GENERAL LICENSE BUT WHICH REQUIRE A VALIDATED LICENSE BECAUSE THE EXPORTER KNOWS OR HAS REASON TO KNOW THEY WILL BE USED FOR NUCLEAR EXPLOSIVES OR ONE OR THE FOUR SENSITIVE PROCESSES.

I WOULD LIKE TO POINT OUT THAT THE MOST STRICT CONTROLS ARE APPLIED TO EXPORTS DESTINED FOR COUNTRIES THAT HAVE NOT SIGNED THE NUCLEAR NON-PROLIFERATION TREATY, OR WHERE THERE ARE PARTICULAR PROLIFERATION CONCERNS.

THE DEPARTMENT OF COMMERCE REFERS ALL NUCLEAR CASES TO ENERGY, WHO SENDS AN OFFICER WEEKLY TO REVIEW THE APPLICATIONS, AND A CERTAIN PROPORTION ARE SENT TO DOE FOR MORE DETAILED STUDY. SUCH STUDY MAY INCLUDE REFERRAL TO THE WEAPONS LABORATORIES AND OTHER DOE FACILITIES THROUGHOUT THE COUNTRY. I AM SURE THE WITNESS FOR THE DEPARTMENT OF ENERGY CAN COMMENT FURTHER ON THIS ASPECT.

CASES THAT RAISE POLICY OR TECHNICAL PROBLEMS THAT ENERGY DOES NOT WISH TO HANDLE UNILATERALLY, HOWEVER, OR ONES WHERE COMMERCE DOES NOT AGREE WITH ENERGY'S RECOMMENDATION, ARE SENT TO THE SNEC. THE SNEC RECOMMENDS ACTION TO COMMERCE (USUALLY A CONSENSUS OF THE OTHER MEMBERS). NORMALLY, A CASE ON WHICH SNEC DISAGREED WOULD BE PRESENTED TO THE NSC AD HOC GROUP ON NON-PROLIFERATION, THE PARENT OF THE SNEC.

IT IS AT THIS POINT, MR. CHAIRMAN, THAT I WOULD LIKE TO ADDRESS A CONCERN YOU HAD COMMUNICATED TO THE DEPARTMENT OF COMMERCE REGARDING THE PROPOSED EXPORT OF HELIUM-3 TO SOUTH AFRICA. PLEASE BE ASSURED THAT THIS PARTICULAR APPLICATION HAS BEEN THOROUGHLY EVALUATED BY DEPARTMENT OF COMMERCE TECHNICIANS AS WELL AS BY THE SUBGROUP ON NUCLEAR EXPORT COORDINATION (SNEC). BASED ON THE STATED END-USE OF HELIUM-3 IN SAFETY-RELATED TESTING OF NUCLEAR REACTOR FUEL ELEMENTS, AS WELL AS THE ASSURANCES TO BE PROVIDED BY THE SOUTH AFRICAN GOVERNMENT, ALL PERTINENT AGENCIES HAVE AGREED THAT THIS EXPORT DOES NOT PRESENT ANY PROLIFERATION RISKS. I WOULD ALSO LIKE TO POINT OUT THAT HELIUM-3 IS NOT ON THE NUCLEAR REFERRAL LIST, WHICH LISTS ALL COMMODITIES THAT HAVE BEEN IDENTIFIED AS BEING OF SIGNIFICANCE FOR NUCLEAR EXPLOSIVE PURPOSES.

IN SUMMATION, MR. CHAIRMAN, I WOULD LIKE TO STRESS THAT THE DEPARTMENT OF COMMERCE IS WELL AWARE OF ITS NUCLEAR NON-PROLIFERATION RESPONSIBILITIES. IN FACT, IN ACKNOWLEDGMENT OF THE VITAL IMPORTANCE OF THE NUCLEAR NON-PROLIFERATION ACT, SECTION 17(D) OF THE EXPORT ADMINISTRATION ACT SPECIFICALLY SAYS THAT NOTHING IN THE EAA'S NATIONAL SECURITY AND FOREIGN POLICY SECTIONS (SECTIONS 5 AND 6) SHALL BE CONSTRUED TO SUPERSEDE THE PROCEDURES INSTITUTED ON JUNE 9, 1978, TO IMPLEMENT THE NUCLEAR NON-PROLIFERATION ACT. WE MAINTAIN FROM THE LANGUAGE OF THIS PROVISION THAT THE EMPHASIS PLACED ON FOREIGN AVAILABILITY IS NOT AN OVERRIDING FACTOR IN OUR NUCLEAR CONTROLS.

I WILL BE PLEASED TO ANSWER ANY QUESTIONS THE SUBCOMMITTEE MAY HAVE.

Written Testimony of Henry David Sokolski

Visiting Scholar

The Heritage Foundation

Submitted to

The Subcommittee on Energy, Nuclear Proliferation

and Governmental Processes

Committee on Governmental Affairs

U.S. Senate

Washington, D.C.

5/13/82

Controlling the export of nuclear technology is an inherently dull and frustrating business. The Departments of Energy and Commerce review hundreds of export requests each month, and virtually all prove to be innocuous and are rightly approved. More important, U.S. nuclear export controls, no matter how sound, can never stop the spread of nuclear weapons technology. Indeed, the United States no longer is the major driving force in the spread of nuclear weapons technology. That role now has passed to other nations.

To be much concerned with U.S. nuclear export controls now, then, would seem unsound. Yet, for several reasons, it actually is now more important that U.S. controls be well executed than before. The reasons are both technical and political.

First, as compared to a nuclear policy of denial, the current policy of reliable supply requires that controls be clearer, not less firm. With a policy of denial, in which certain nuclear exports are banned, and nuclear exports of any kind are prohibited to problem countries, specific mistakes or policy deviations can be written off as foul ups or prudential exceptions. With a policy of reliable supply, in which nuclear contracts are honored so long as the recipient stays clear of certain dangerous activities, though, a lapse in sound control--such as an export of an item that could aid a weapons program known to be underway--is much more upsetting. Congress and public groups, which currently fear that reliable supply is simply a euphemism for "business as usual" will seize upon the event not to demand better execution of the policy, but rather to call for its revocation in favor of a policy of denial. The recipient nation, on the other hand, will tend to view such public protests as proof of the very unreliability the supply policy was intended to overcome. If we want

the leverage that comes with the supply of relatively safe nuclear technology to countries toying with nuclear weapons programs, then, it is essential that the trade clearly be safe. What this entials will vary, of course, from case to case, but under a policy of reliable supply certain minimum criteria--for example, that no nuclear exports be allowed if they might go to an unsafeguarded facility--will actually have to be followed more closely than before.

Second, even though a great deal of basic nuclear information is now widely avaiable, the success of small nations' nuclear weapons efforts still depends heavily upon the export of nuclear hardware from the United States and other Western countries. Of particular concern is trade in dual-purpose items put to dangerous nuclear end uses. Pakistan, purchasing such items, for example, obtained nearly all that it needed to build an unsafeguarded centrifuge uranium enrichment plant without asking for items that require a Nuclear Regulatory Commission (NRC) export license. This was done intentionally to avoid the attention of other nations. For the same reason, countries building a dedicated nuclear weapons facility are unlikely to try to buy anything but dual-purpose or grey-area nuclear technology. Demand for such dual-pupose items, however, does not stop with a nations's acquisition of its first nuclear weapon. To the contrary, as small nations strive for hydrogen weapons mounted on intermediate range ballistic missiles, their demand for further Western technology transfers will increse, not slacken.

Third, although the United States cannot dictate the specifics of other nations' export controls, how well we maintain our own controls has a direct effect on the conduct of other exporters. U.S. nuclear export controls are among the very firmest. Our example, however, comes at a cost. When we

do our worst, this too is seized upon as a standard of international accepatbility. This point takes on significance in light of current negotiations that the United States recently initiated with members of the London Nuclear Suppliers' Group to tighten restrictions on centrifuge related exports. These are the first serious suppliers' negotiations to be conducted since 1977.

Our conduct is also important in regard to French policy, which the West Germans often use as a standard for their own conduct. Until the recent elections, the French were only moderately cooperative in efforts to control Western nuclear exports, and were lax with their own export controls. The current government is on public record as wanting to tighten these controls, and there is a major debate now being waged over the issue within the government. The forces backing stricter controls have met with some success; recently the CEA proudly announced that it had just refused an Argentine request for tritium technology related to its production in heavy water reactors. Such a refusal is most unusual coming from what previously was one of the most irrepsonsible of the nuclear suppliers. How well the London Nuclear Suppliers' Group negotiations go and how well the new French government does in tightening French export controls, in part, will depend upon the United States maintaining its reputation for firmness.

Finally, there is the problem recently introduced by dangerous Soviet and Chinese nuclear commerce. Besides exporting heavy water to Argentina (presumably for its safeguarded power reactor), the Soviet Union has also sold Argentina elaborate zirconium technology (which until the sale, was one of the few remaining missing links in Argentina's nationally independent effort to acquire nuclear weapons). The Chinese (who are not even signatories of the Nuclear Nonproliferation Treaty have meanwhile

sold reserve quantities of heavy water to Argentina and announced their willingness to sell all manner of nuclear items to the highest bidder. Such trade is clearly calculated to counter U.S. and Western interests. To isolate and stigmatize such trade, sound U.S. nuclear export control is again a necessary ingredient.

Fourth, U.S. nuclear export controls still lend themselves to unnecessary public embarrassment. Many experts thought that the problem of nuclear export control had largely been taken care of with the establishment of the NRC and the requirement that the most dangerous processing and utilization equipment and nuclear materials had to be licensed by the Commission. Several items originally on the NRC's review list, though, have been remo ed to the Commerce Commodity Control List. Items on this list (which make up a large part of nuclear end use exports from the U.S.) are handled under much less public review than NRC licenses. This lack of visability (which is necessary during a review for intelligence and busieness confidentiality reasons) unfortunately encourages either technical narrowness and political insensitivitity to the ramifications of approving the export or imprudent political manipulation of the standard review process from above. Finally, there still are some legal loopholes that experts both within and outside the administration agree can and should be easily closed.

These points are fairly general in scope. With several examples of lapses in sound U.S. nuclear export control, though, they gain specific significauce. Four such cases are offered below.

THE HELIUM EXPORT REQUEST

I first learned of this export license application for the sale of 95 grams of Helium 3 to South Africa on March 17th. Helium 3 is a decay product from tritium. The major source of Helium 3 is thermonuclear weapons whose tritium has decayed (tritium is used in very small quanities to fuel thermonuclear weapons).

The Department of Energy, which produces our nuclear weapons, is the only suppiier of Helium 3 in the U.S. although it may be sold for resale through private U.S. brokers. In the West the only other source of Helium 3 is France. There is no evidence that South Africa has attempted to buy Helium 3 from France. Indeed, given the high political costs associated with any direct sales of such materials to South Africa for the new French Socialist government, a sale would be most unlikely. This, however, was not the case for a private U.S. brokerage firm consisting of former DOE employees. It, in fact, secured a sale of the material to South Africa and requested a Commerce Department export license earlier this year.

The proposed end use of the material is as a neutron absorber or poison in the testing of individual power reactor fuel rods. This testing would be done in a ramp testing facility to be built at the Safari test reactor at Penlindaba.

Conceeding that Helium 3 would be need for such tests, several problems remain with this export.

First, technically this material <u>can</u> be used to make weapons-usable tritium. From a little under one gram to several grams a year could be produced in the course of routine ramp tests. Although this is a small quanity of material in absolute terms, only a small amount (some experts have publically speculated 10 grams or more) is needed to fuel advanced weapons. Certainly, it would be a serious mistake to assume that the tritium produced

from Helium 3 is much less useful for weapons purposes than that produced from natural lithium of Lithium 6. Also, since personnel exposures to tritium can be dangerous, it is generally desirable to extract the tritium produced from Helium 3 in ramp tests. Thus, as a matter of course, Swenden bleeds tritium from its ramp test facility into a special tritium vessel. Unlike the presence of lithium rods in a reactor, which automatically betrays dangerous activity, the production of tritium from Helium 3 in ramp tests would be much more difficult to monitor.

Second, South Africa's need to do its own ramp testing is strained at best. To date it has not even announced an intention to sell fabricated commercial fuel. More important, if it wanted the very best information on fuel performance and advanced designs data, it could get 40 data points along with subscription rights to further findings by cooperating with a series of nuclear power reactor countries engaged in extended burn-up research and paying a fee of approximately $100,000 (the approximate cost of the Helium 3 export alone). For $500,000 it could get access to all the advanced knowledge on fuel performance known to the Western world. South Africa, not yet a subscriber to any of these programs, apparently has chosen to go it alone. Yet, to do so will mean spending 3 to 6 million dollars to develop its own facilities and waiting several years just to get the first point of data. Ramp testing is not necessary for low-temperature research reactor fuel.

Third, and most important, the sale of this material now is almost certain to send the wrong signal to both South Africa and other Western nuclear exporters. Some officials argue that South Africa could get better tritium sooner simply by irradiating natural lithium, which it already has

access to. They also point out that the United States would seek assurances from South Africa that it would not use the Helium 3 for weapons purposes. Unfortunately, these arguements do not address the political ramifications of going through with the sale. United States intelligence sources have gone on record speculating that it was South Africa that tested a low-yield nuclear weapon of advanced design in the fall of 1979. Some U.S. intelligence sources have told the U.S. press that South Africa has been working with Isreal on advanced tactical weapons involving thermonuclear reactions. If any of these reports are true and are know to be so by the United States, the message we are sending to South Africa (intentionally or not) may be even worse than if these stories are untrue. Certainly, it is not as though this export is the only or even the most important sensitive sale to South Africa that the Commerce Department has considered or granted in the last two months.

More important, this export (which must be made public if approved) will hardly help the United States in its current supplier negotiations. Indeed, it poses the very real threat that the United States might actually push ahead of France in the supply of sensitive tritium related technolgoy to problem countries.

Finally, one of the most disturbing features of this case is that although it has not yet been approved, the Departments of Energy, Defense, Commerce and State were ready to sign off on the license up until last week. In fact, some of the most important technical work on the Helium 3 export was only done in the last ten days in response to possible hearings. At the State Department it also is clear that although low-level officials were duly briefed on this proposed export at an early stage, these officials did not bring the case to the attention of higher-level officials. Thus,

it was not until at least a month's time or more after the Department of Energy's first consideration of the export that any high-level State epartment or National Security Council officials knowledgeable about the possible regional diplomatic ramifications of the sale were even informed of it (an then only as a result of outside contacts).

THE SOUTH AFRICAN FOXBUROUGH STORY

This export, a dual-purpose Commerce Commodity Control item on the nuclear referral list, involves process control computer equipment used to measure and track material flows. The machine in question was rather large (suitable for the tasks of keeping tract of reprocessing and enrichment flows) and is not of the sort in use at any U.S. power station. More important, the site of end use was neither at the power station location at Kolberg or at the safeguarded U.S. research reactor facility at Pelindaba. The equipment is now believed to be in use at the secret enrichment facilities at Valindaba.

THE ARGENTINE FOXBUROUGH STORY

This export also involved process control equipment. The Swiss, under contract to complete a heavy water production plant for the Argentines, requested this equipment from Foxburough of the U.S. along with the pertinent technical information for installation and operation. What is interesting about this export is that it was approved at all. Sulzer, the Swiss firm responsible for building the Argentine heavy water plant, assured the U.S. that the plant would be under IAEA safeguards when completed. In fact, there has been a standing policy of refusing any nuclear export if there is a chance it might go to an unsafeguarded facility. At the time of Sulzer's request the IAEA had not yet negotiated a safeguards agreement for the heavy water plant. Now, almost a year later, an agreement is no closer to negotiation; Argentina is at war with our closest ally, and the Junta seems to be pushing as quickly as possible to complete all the unsafeguared facilities necessary to produce nuclear weapons materials. Meanwhile, our nuclear aid has been joined by much more dangerous exports of heavy water and zirconium technology from the Soviet Union and China. It is likely that the Swiss will insist that IAEA safeguards be placed on the commercial heavy water producation plant. Yet, the history of this episode to date hardly instills confidence and certainly suggests the imprudence of our taking such risks in the future.

THE INDIAN AEROSPACE EXPORT

Toward the end of the Carter Administration several dubious export

requests were considered. One that was approved that should not have been was for unique American aeorspace vibration testing equipment to India (license number 46228/3123). This equipment was to be "in cooperation with the Indian Space Research Satellite Program." In fact, it will definitely be useful in the design and testing of military reentry vehicles, which is what such equipment has been used for in the United States. Ironically, at the time SNEC members wanted to deny the export and several other similar Indian space requests but did not because they could not find the statuatory authority to do so.

WHAT'S WRONG?

Certainly, it would be a mistake to seize upon these examples as grounds for a major revamping of our current nuclear export control system. What controls we now have are basically sound. On several counts, though, they could be improved.

First, most of these exports above would not have been approved if those recommending approval at the time knew that their decisions once final would be made public immediately. Because there are so many Commerce and Department of Energy technolgoy transfer approvals reviewed per month and these are considered confidential for business and intelligence reasons during their review, it is a fairly safe bet that most final export decisions will not be publicized for some time. A good example here is our Indian case--now almost two years old.

Second, a much greater range of discretion and number of decisions are forced on those responsible for recommending aciton on grey or discreationary

nuclear technolgoy exports. Many items that have very significant nuclear end uses--e.g., heavy water, tritium, zirconium--ironically reqire less safeguard requirements under the law than lightly enriched uranium. Similarly, some dual purpose items that are absolutely essential to making advanced nuclear weapons require less in the way of safeguard assurances under the law than some innocuous reactor spare part. This suggests that what nuclear export items fall into what legal categories (which items require full scope IAEA safeguards, which items reqire only IAEA safeguards at the facility of use, and which items only require some sort of review evaluation or, where warranted, a government to vendor or government to government assurance) needs to be reexamined. Indeed, in general the objective should be to make the export control approval process more predicable both for those having to pass on the export requests and for those making them. Allowing more and more items to fall into categories in which sensitive exports may or may not be approved or that may or may not be required to be accompanied by assurances that are themselves frequently ad hoc creations is not the right way to go. Although Department of Energy technology transfer approvals present a somewhat different case, the same basic principle should and can be applied.

Third, it is unreasonable to expect sound nuclear export control to occur without a fairly clear political statement of what this export control is supposed to accomplish. Many of the export control decisions are made on a day-to-day basis by mid-grade civil servants. Their role is not to made policy but rather to make techical decisions, which although important, can never constitute an export policy per se. The later instead requires firm political guidance. The water in the galss of a particular nuclear

export may be at mid-point, and this may require an expert's skill to determine, but to judge whether or not the glass is half empty or half full requires something more--a political judgement.

Fourth, it is fine to talk about improving export controls and stiffening U.S. political resolve, but unless additional funding is devoted to these efforts, such rhetoric may only make matters worse. Expectations will be raised without improved performance and this could well serve to discredit the policy of tighter export controls (this is true not just of nuclear export control, but also of the closely-linked controls on the sale of high technology to the Soviet bloc). Since the end of 1980 there has been a 40 percent drop in the number of personnel working on nuclear technology export controls in the key participating SNEC agencies. This reduction, moreover, is not simply one of numbers; the independent expertise of the participating departments has fallen significantly. Such cuts may seem to be an attractive way of reducing federal spending, but they contribute very little toward making a policy of reliable supply work, much less toward building and maintaining the infrastructure crucial to export control in general.

Fifth, far too little political attention is focused on the diplomatic ramifications of advanced nuclear weapons efforts by small nations. That India should be moving toward ICBMs is nearly as significant a development as its acquisition of its first nuclear device. It must be clear that we will not award new members of the nuclear club or will simply turn a blind eye to their efforts to upgrade what nuclear forces they might have.

WHAT TO DO

The visibility of SNEC activiites should be increased. Some SNEC members suggested that the group's agenda be shared on a confidential basis with a staff member from the Senate Select Committee on Intelligence or perhaps with the three or five Congressional staffers focusing on the the problem of nuclear weapons spread. Others suggested that the Department of Energy forward the list of items it intends to review for possible consideration at upcoming SNEC meetings (this would not be the actual list of items SNEC would consider, but would be at least a more refined list than a listing of items Commerce initially sets aside for DOE to screen). All agreed that at a bare minimum Congress should be informed of nuclear export decisions soon after they are finalized.

Second, some review should be done on whether items currently covered by Regulation 378 of the Commerce Department ought to be considered under section 109 (b) of the Atomic Energy Act and whether there are items now under 109 (b) that might be more appropriately conisdered under the Nuclear Regulatory Commission, 10 Code of Federal Regualtions Part 110.

Third, Department of Energy technology transfer approvals (covered under Department of Energy, 10 Code of Federal Regulations Part 810) should be tightened either by adding noncommunist nations to the prohibition list or by adding the activities of power and research reactor design, construction, and technical consultation to the sensitive activities list. As it now stands the Department of Energy could not legally prohibit a U.S. firm or individual from helping either Pakistan or Argentina build or operate unsafegguarded reactors even if these reactors were crucial to production of nuclear weapons materials.

Fourth, a public presentation of SNEC export policies should be made. It might also be useful to assure that the same is done when the SNEC equivalent for aerospace exports (now being discussed) nears formation.

Fifth, to give the proposed aerospace SNEC legal backbone, the Nuclear Nonproliferation Act of 1978 (section 309 c) should be extended to cover not only nuclear weapons, but nuclear capable delivery systems such as ballistic missiles. Such an amendment should be used not to expand the current licensing authorities (much equipment is already on other export control lists) but to give officials saddled with the task of licensing such exports legal grounds for denying them.

Sixth, personnel levels for nuclear export and export controls in general should be increased. Special attention should be paid here to increasing the independent technical expertise of Defense, ACDA, and the State Department, particularly in the area of advanced proliferation analysis (i.e., in advanced weapons design requirements, delivery systems, computers, and individual nations' force growth requirements.)

CONCLUSION

The United States has one of the best nuclear export control systems in the world. Nothing said here should be taken as an effort to reduce its stature. Indeed, it is precisley because of its recognized excellence that it would be a shame in any way to let it deteriorate. In the coming decade the nuclear export control system will be under new and greater pressures. This is ro time to pass over it simply because it seems to be dull.

Congressional Research Service
The Library of Congress

Washington, D.C. 20540

AN ANALYSIS OF OFFICIAL ARGENTINE STATEMENTS ON THE PURPOSE AND DIRECTION OF ARGENTINA'S NUCLEAR PROGRAM

Joseph F. Pilat
Office of Senior Specialists

and

Warren H. Donnelly
Senior Specialist
April 22, 1982

CONTENTS

PURPOSE..... 1

INTRODUCTION..... 2

SELECTED STATEMENTS..... 3
Excerpts and Summaries of Selected Statements at International Forums. 3
Plenary Conference of the International Nuclear Fuel Cycle Evaluation (INFCE), February 1980..... 3
The 24th Session of the General Conference of the IAEA..... 4
The 25th Session of the General Conference of the IAEA..... 5
Excerpts and Summaries of Statements from Other Sources..... 6
An interview with CNEA's President, 1979..... 6
An Argentine Foreign Ministry statement, 1980..... 7
A speech by the CNEA President, 1980..... 7
An interview with CNEA's President, 1981..... 8
An interview with CNEA's President, 1981..... 11

ANALYSIS AND DISCUSSION..... 14
Overview..... 14
Attitudes toward stopping the further spread of nuclear weapons.... 14
Attitudes towards the international non-proliferation regime..... 15
Attitudes towards IAEA safeguards..... 16
Attitudes toward U.S. policies..... 16

PURPOSE

What Argentinian officials have said about the purpose and direction of their nuclear power development is an element for consideration in thinking about possible proliferation risks posed by Argentina. In the following, official statements drawn from speeches in international forums, or from speeches and interviews of officials reported in the Argentinian press, are excerpted or summarized and then examined for their main themes.

INTRODUCTION

Authentic sources of statements by Argentinian officials were found in the report of the plenary conference of the International Nuclear FuelCycle Evaluation (INFCE) and in proceedings of recent sessions of the General Conferences of the International Atomic Energy Agency in 1980 and 1981. These statements are supplemented by excerpts and summaries of remarks by officials -- primarily those reported in various media, and reproduced in the Foreign Broadcast Information Service's series on nuclear development and proliferation.

SELECTED STATEMENTS

Excerpts and Summaries of Selected Statements at International Forums

Plenary Conference of the International Nuclear Fuel Cycle Evaluation (INFCE), February 1980.--The Argentinian representative at the Plenary Conference of INFCE in February 1980, said INFCE had

> . . . confirmed that attempting to limit the development and integration of a nuclear power program on a national level does not increase the guarantees of non-proliferation, first because it is not the logical route -- direct and secure, and economic -- that a nation would choose to attain nuclear weaponry. Secondly, the uncertainty increases when a nation totally ignores international cooperation in order to obtain that which is denied to it.

He emphasized the Argentina view that IAEA safeguards are all that is needed to prevent misuse of nuclear energy, as follows:

> The possibility of access to the technologies, equipment and supplies needed for a nuclear program, with no other conditions except the rational application of the OIEA [International Atomic Energy Agency] safeguards. Bi-lateral and multi-lateral cooperation will produce a flourishing of international commercial, institutional and legal ties that will offer a clear view of nuclear activities. This will provide a guarantee that nuclear energy will be used exclusively for peaceful ends. Only by re-establishing mutual trust will it be possible for the harmonious development of nuclear energy necessary for the world in which we live.

However, Argentina questioned the objectivity of INFCE's concerns about non-proliferation:

> . . . It is abundantly evident that all the groups have expended enormous effort in analyzing only one aspect of the problem -- horizontal proliferation. The Argument used -- that vertical proliferations is a political problem -- and therefore outside the terms of reference demonstrates the duplicity of criterion that has been applied to judge the problem.

For Argentina, it seemed that INFCE was a great deal of effort to reach the already known conclusion that a program of nuclear capacity is not now nor ever was the way to produce nuclear weapons. Also, technical means were seen to be useless in preventing horizontal proliferation. "As we have long maintained, horisontal as well as vertical profiferation is an exclusively political and therefore can only be solved in the political realm." On plutonium, the Argentinian delegate said that from the Argentinian viewpoint, "the information accumulated by INFCE shows that the fuel cycles with plutonium are part of the future of nuclear fission as a source of energy."

Futher concerning plutonium, Argentina commended the IAEA's involvement in study of international plutonium management. However, Argentina does not believe the Agency had adequate means to fulfill its technical assistance functions. And, without naming the Agency, he criticised the discriminatory nature of the non-proliferation regime. The unilateral controls imposed primarily by the nuclear suppliers, he said, led to anarchy:

> We cannot keep thinking that continuing control: safeguards Club of London, previous consent, IPS, etc. [will be effective.] We cannot keep on retroactively modifying the clauses, by unilateral decision. We cannot continue to demand submission without perceiving that it is pushing the subjugated one to develop the capacity to liberate itself. In synthesis, in this way it is fomenting an anarachical, unconnected, uncontrollable world. It is precisely the opposite of what we wish to achieve.

The 24th Session of the General Conference of the IAEA.--In a statement to the General Conference of the IAEA on September 23, 1980 during the 24th regular session, 1/ the Argentinian delegate underscored the peaceful intent of his country's nuclear program. He said that Argentina's nuclear cooperation with Brazil "disapproves the arguments used to limit the nuclear development

---

1/ Main points of the 24th General Conference of the IAEA, September 1980.

of both countries based on potential nuclear armament race between both countries." Furthermore, in "reaffirming our pacifist vocation," in 1980 Argentina had initiated negotiations to subject a number of nuclear facilities to IAEA safeguards, including the research reactor in Bariloche, the Atucha II nuclear power plant, and the Arroyito heavy water industrial plant. As well, Argentina would extend safeguards to its new nuclear fuel fabrication plant.

The delegate from Argentina expressed satisfaction with the IAEA's Committee on Assurance of Supply (CAS) and approved without reservation its programs for nuclear safety and environmental protection. However, the "restrictions placed on the awarding of IAEA technical assistance exceed the statute." Also, the Agency's program for technical assistance was not adequate and not growing according to necessities, unlike the safeguards program which continued to increase beyond all forcests. On safeguards, he said further that:

> . . . implementation of the program of safeguards should be economized by means of an improvement of equipment and a better utilization of personnel.

The 25th Session of the General Conference of the IAEA.--In a statement to the 25th session of the General Conference of the IAEA on September 22, 1981, 2/ the Argentinian delegate announced a doubling of its voluntary contribution to technical assistance, and offered to undertake certain technical assistance projects. He congratulated the Secretariat on resolving certain problems concerning technical assistance, but said:

> there still remains a discriminatory attitude by some countries in the presentation of technical assistance through the Agency . . . on the basis of attention to a particular treaty . . . [i.e. the Nuclear Non-Proliferation Treaty]. . . .

2/ Main points of the 25th General Conference of the IAEA, September 1981.

Such discrimination, he said, is prohibited by the Statute of the Agency. He welcomed the increase in funds for technical assistance, but said they were still insufficient. Comparing funding for technical assistance and for safeguards, the Argentinian delegate said:

> For 1982, the funds assigned for technical assistance represent less than 16 percent of those planned for safeguards. The expenses coming from safeguards applications to nuclear installations for peaceful purposes in countries possessing nuclear weapons correspond to 50 percent of the sum used for technical assistance projects which were not carried out last year because of lack of funds. The sum used to control facilities that are obviously not for military purposes is only 3 percent of the safeguards budget but represents one fifth of the technical assistance sum.

He asserted further that:

> safeguards would be strengthened if the funds assigned . . . were used rationally, accenting those special fissionable materials which are suitable for the production of nuclear weapons.

The Argentinian delegate expressed interest in peaceful nuclear explosions, saying: we believe it is important for the Agency to continue its work in the field of nculear explosions for peaceful purposes."

Excerpts and Summaries of Statements from Other Sources

An interview with CNEA's President, 1979.-In an interview on the occasion of National Atomic Energy Day, published in La Prensa (Buenos Aires) on May 31, 1979, 3/ Vice Admiral Castro Madero, President of the CNEA, (Argentina's Atomic Energy Commission) said that Argentina's national nuclear plan:

> is aimed at stepping up the scientific, technical, and industrial effort in the nuclear field for peaceful uses and utilization of the country's human and natural resources in this field so as to help consolidate national growth. 4/

3/ Translation in FBIS/NDP, No. 2, July 13, 1979. pp. 44-47.

4/ Ibid. p. 45.

As for specific objectives of the plan they included "development of a continuing nuclear research and development program for peaceful purposes"; contribution to the development of domestic science and technology through the achievements attained in the nuclear field"; and "stepping up the output of nuclear electric energy, contributing to the development of the country's interior and hydrocarbon saving." 5/

An Argentine Foreign Ministry statement, 1980.--At a meeting at the Argentinian Foreign Ministry on March 10, 1980, which was attended by the Foreign Minister, the President of CNEA, and the Argentine ambassadors to the Canada and West Germany, it was reiterated that Argentina had made a national decison "to use nuclear energy exclusively for peaceful purposes." All forms of foreign interference with Argentina's nuclear development were rejected. Since the production of nuclear weapons is entirely dependent upon each country's decision, " . . . it cannot be prevented through restrictions imposed on the transfer of technology." 6/

A speech by the CNEA President, 1980.--At the Congress of Specialists of Nonaligned Nations, in 1980, reported in La Opinion (Buenos Aires), 7/ Castro Madero criticized the "London Club", the IAEA and the NPT, saying that:

> intentions of the Club of London to protect the economic interests of the suppliers in the nuclear field -- agreeing that they want to prevent proliferation -- almost completely paralyzed international trade in this field. 8/

5/ Ibid. pp. 45-46.

6/ Noticias Argentinas (Buenos Aires). March 10, 1980. Translation in FBIS/NDP, No. 37. April 3. 1980. p. 27.

7/ July 5, 1980. p. 13. Translation in FBIS/NDP. August 19, 1980. pp. 3.5.

8/ Ibid. p. 3.

As for the IAEA, Castro Madero said it had been used as "a restrictive agency" to benefit certain political and economic interests 9/ [i.e. the nuclear suppliers] And, the NPT had proven to be " . . . an obstacle in the way of harmony and understanding in the international nuclear field." 10/ Concerning the nuclear free zone which would be established by the Treaty of Tlatelolco, which Argentina has not ratified, there were certain problems. Nonetheless, the treaty established "the unavoidable necessity for the Latin American countries to avail themselves of their right to the maximum extent and to have more equitable access to this source of energy in order to speed up the economic and social development of their peoples." 11/

An interview with CNEA's President, 1981.--In an interview of June 3, 1981, published in Estrategia, 12/ Castro Madera discussed the Argentinian attitudes toward the policies of the London Club, U.S. non-proliferation policy under the Reagan Administration, international safeguards, and Argentinian ratification of the Treaty of Tlatelolco.

On obstacles imposed by the Nuclear Supplier's Group, or the "London Club", Madera said:

> The pressure [exerted by the London Club] for the country to sign the non-proliferation treaty or to subject its entire nuclear program to safeguards persists, and I don't think that it will decline. . . Furthermore, Argentina is encountering increased difficulties in procuring equipment for its programs, [from the nuclear suppliers], and must substitute for this with its own manufactures, of course, at a higher cost and with additional delay. These obstacles confirm to us the need to achieve as soon as possible the greatest degree

---

9/ Ibid.

10/ Ibid.

11/ Ibid. p. 4.

12/ Estrategia, No. 69. pp. 55-61. Translation in FBIS/NDP, No. 124. December 1, 1981. pp. 8-13.

of autonomy in the mastery of the fuel cycle, so as to avoid being denied, for the sake of non-proliferation, the opportunity to carry out the energy development which the country requires. 13/

Nevertheless, Argentina was able to get assistance from London Club members:

Among the very members of the Nuclear Club, or the London Club as it is usually termed, we have found some who (without violating their commitments to it) have been able to supply us with materials and nuclear technology without supplementary requirements. This holds true for the Federal Republic of Germany, the Swiss Confederation and the USSR itself. 14/

As for the United States, he expected changes in U.S. nuclear cooperation and non-proliferation policy under the Reagan Administration, but he was not sanguine those changes would be either speedy or extensive. Of this he said:

Argentina is waiting to see the announced change of policy by the United States in its nuclear relations with Argentina in concrete actions. Nevertheless, because of what has been noted previously, it is likely that the restrictions will continue on the transfer of technology in major areas of the nuclear fuel cycle.

. . . first contacts appear to indicate that the Reagan government wishes to improve relations with Argentina in nuclear areas, and to make the United States' nuclear policy as a whole more reasonable, but nevertheless maintaining the basic objective of preventing proliferation. Therefore, a reduction in the non-essential restrictive action for that objective is to be anticipated, such as the "doctrinaire" opposition to all independent action in the nuclear fuel cycle, and the obstacles to exporting components and materials related only peripherally to that cycle. However, it should be recalled that many aspects of the implementation of a change in the United States' nuclear policy will require legislative changes, which entail a considerable time scale. Moreover, when the nuclear policy becomes more reasonable, there will probably be a reduction in the differences between the United States and other countries exporting nuclear technology, which could intensify the approach of potential obstacles to free exchange in this area. 15/

13/ Ibid. p. 9.

14/ Ibid. p. 12.

15/ Ibid. p. 10.

On IAEA safeguards, he said Argentina accepted them on imported technology, but that acceptance of full-scope safeguards would result in lost of Argentinian leverage with the nuclear suppliers:

> Argentina maintains that the international exchange of nuclear technology must be covered by suitable safeguards, as a means of promoting the development of nuclear energy for peaceful purposes. On this basis, it has put under safeguards all the nuclear facilities that it has received from abroad, but it refuses to subject to safeguards those facilities which have been developed and built with its own technology, and wherein it has not received any assistance from abroad. This is the only way of actually giving an incentive to external assistance in areas that have been unilaterally defined as sensitive by the London Club. It refuses to give a blank check, such as the signing of total safeguards, which would leave the country without the capacity to negotiate for the procurement of major nuclear technology. In short, safeguards are accepted in exchange for technology. 16/

It was difficulties over safeguards questions, as well as nuclear technology transfers and of peaceful nuclear explosions that had caused problems with ratification of the Treaty of Tlatelolco. Of these matters he said:

> . . . prior negotiations with the International Atomic Energy Agency concerning the agreement on safeguards for all its nuclear facilities and activities which is required by Article 13 of the aforementioned international instrument. This step (which the other Latin American countries that signed it took "a posteriori" [after] its ratification) has been deemed unavoidable as a way of insuring that this agreement on safeguards (which, if the Treaty were ratified previously, was to be started and completed in established intervals) does not become a significant obstacle or hindrance to Argentinian nuclear technological development for peaceful purposes as a result of the pressure brought to bear on the International Agency by the countries that are supposedly champions of "non-proliferation".
>
> . . . major difficulties have cropped up . . . They are due precisely to the pressure imposed on the International Agency . . . which has brought about interpretations of the Treaty's clauses that are unacceptable from the Argentinian standpoint, because accepting them would interfere with freedom of action in our nuclear development. This holds true for nuclear explosives for peaceful purposes . . . interpretative statements made by those countries [the U.S. and the U.S.S.R.] upon undertaking their respective adherence, which result in the

---

16/ Ibid. p. 11.

> establishment of additional restrictions on the nuclear development of the Latin American nations for peaceful purposes, have contributed to the pressure on the International Atomic Energy Agency with regard to its own interpretation of the clauses of the Treaty of Tlatelolco, in our case creating . . . difficulties in the negotiations . . . the ratification of the Treaty of Tlatelolco is contingent on the attainment of a suitable agreement on safeguards with IAEA, and the matter of dispensing with Article 28 is by no means definitive. 17/

An interview with CNEA's President, 1981.--Castro Madero, in an interview published in Mercado on July 30, 1981, 18/ said the nuclear energy was important to Argentina's development:

> Almost since the time of the establishment of the Atomic Energy Commission, Argentina has developed a very coherent policy which looks toward the future, considering the need for this new energy source that the nation would have . . . .
>
> Our national government is aware of the importance of nuclear energy for Argentina's future development; it is aware of the advanced position that the nation has achieved through its 30 years of work in this field 19/

He praised Argentina's operational nuclear power plant, saying that it made

> . . . the nation outstanding not only in the Latin American orbit, but also in the world, particularly among the developing nations. There are very few developing nations which have nuclear power plants, and there are a great many countries which may be considered developing nations. The Argentinian nuclear program is one of the few nuclear plans that are now moving ahead in the world. 20/

17/ Ibid. pp. 10-11.

18/ Translation in FBIS/NDP, No. 113. September 14, 1981. pp. 22-23.

19/ Ibid. p. 23.

20/ Ibid. p. 24.

Castro Madera spoke out against external pressures, particularly by the United States, on Argentina's nuclear development. On external pressures generally, he said:

> Argentina has a very firm and definite position. Our policy has always been very clear, very frank, and very open, so that the pressures that are still being exerted to keep us form acquiring control in this field have been inadequate and not truly rational. Most recently, the latest attempt was to try to include a clause in the safeguard agreement that Argentina was to sign with the support of the IAEA, based on a commitment by the Federal Republic of Germany, about the Atucha II safeguards, which we rejected. I made a presentation pointing out the arbitrary nature of that clause, and showing our disagreement with it. 21/

Concerning the United States, he said:

> I think the U.S. nuclear policy has changed, but in its broad outlines. Not its relations to Argentina. That is what we find as far as the letter of the law is concerned, because as the policy stands, no exchange of technology between the two countries will be possible. The United States policy requires that countries which may receive U.S. technology must be signatories of the Nuclear Non-Proliferation Treaty, or subject all their nuclear facilities to safeguards. And as Argentina does not accept either of these alternatives, if we follow what the U.S. legislation says, it would appear very difficult for us to have any cooperative exchange with the United States. Unless they are more flexible in the implementation of this policy; I think that in this respect, the current administration may be more favorably disposed to Argentina. 22/

Castro Madero used this occasion to reiterate the Argentinian position on safeguards, particularly on the full-scope safeguards. Argentina, he said:

> . . . is not prepared to sign a blank check, which is what signing total safeguards agreements would amount to. Argentina believes there has to be an equilibrium, a balance, between the guarantees that the nation gives and the reception of the technology it needs for its development. We should not forget that the countries which placed their trust in and signed the non-proliferation treaty, which wrote a blank check, in exchange for the promise that they would get all the technology needed for their nuclear development for peaceful purposes, have been completely defrauded.

21/ Ibid. p. 24.

22/ Ibid.

When asked what countries had been defrauded, he elaborated:

> All the ones which signed the treaty [i.e. the NPT] there are 111 of . . . . That was apparent during the conference to revise the treaty, because those countries showed their disagreement. They have kept their promise not to engage in military developments, while the developed countreis have not kept their commitment to provide technology, and there are also some reservations about whether they did their best to achieve nuclear disarmament. This means that they made in the treaty. Argentina has no intention of developing its nuclear technology for military purposes, but it is willing to provide safeguarded guarantees in exchange for the provision of assistance through equipment, technology, etc. 23/

Note that not only did Madero say Argentina had no intention of developing nuclear weapons, but he said he believed this was true also for Brazil. Asked about reports that Brazil was surreptiously producing nuclear weapons, he answered:

> I think that report is false. Brazil has a nuclear program with very close ties to the Federal Republic of Germany, and it is totally covered by safeguards. In my opinion, it would be impossible for Brazil to conduct a military program. And that is independent of the repeated assurances by Brazil tha it is only pursuing the use of nuclear energy for peaceful purposes. 24/

23/ Ibid. pp. 24-25.

24/ Ibid. pp. 33.

ANALYSIS AND DISCUSSION

Overview

The official Argentinian pronouncements say that, its civil nuclear program is peaceful in nature and intent, and will not be misused to produce nuclear weapons. Statements for international consumption underscore this reassuring theme, as do statements for domestic consumption. However, Argentinian officials attack the international understandings and commitments -- notably the NPT and the nuclear suppliers' guidelines -- designed to keep civil nuclear programs from being misused for military purposes. The statements show Argentina's intention to develop a complete nuclear fuel cycle, including production of plutonium which could eventually bring its government closer to an ability to make nuclear weapons.

Attitudes toward stopping the further spread of nuclear weapons

Statements of Argentinian officials are sometimes intended to counter international suspicions of a military thrust of its nuclear program, specifically the attempts to acquire sensitive technology and equipment to produce heavy water and plutonium. And Argentinian statements have repeated Argentina's commitment to the peaceful uses of nuclear power, 25/ and can be read as a pledge by Argentina not to acquire nuclear weapons. They can not be read as a

---

25/ Note, Argentinian official statements do not highlight energy and development issues, and do not argue as strongly for nuclear power as do some other developing countries. However, the right it not also the need of the third world to develop nuclear energy programs is implied or explicit in the Argentinian public posirion on the IAEA, the NPT, etc.

guarantee against so-called "peaceful nuclear explosions," which Argentina is unwilling to renounce. Further, they do not imply support of the NPT, the Treaty of Tlatelolco, or agreement with U.S. supported non-proliferation policies and measures.

Attitudes towards the international non-proliferation regime

Argentina is one of the strongest critics of the international non-proliferation regime and the non-proliferation policies of the U.S. and other nuclear suppliers. Argentinian criticism of the NPT and the Nuclear Suppliers' Group, in both international and domestic forums, focused on perceptions of discrimination. For Argentina, there policies perpetuate a nuclear status quo, to the disadvantage of the developing nations, by denying them access to the full range of nuclear technology, meaning enrichment and reprocessing.

This tendency is also evident in the IAEA, according to Argentinian officials, who believe this is a violation of the 1957 Statute that established the Agency. Official statements indicate that Argentina perceives the Agency's primary function to be technical assistance and promotional, whereas the United States and other nuclear supplier nations believe the principle function to be regulation. In the restrictive conditions placed on technical assistance, as well as the focus on safeguards at the expense of technical assistance programs and projects, Argentina sees pressures by and the influence of the nuclear suppliers in the Agency.

According to Argentinian officials, the Treaty of Tlatelolco, which Argentina has not yet ratified, is not intrinsically discriminatory. However, the Argentinians have difficulties with certain aspects of the Treaty.

Argentinina criticism of the international non-proliferation regime reflects that of other third world countries, among which Argentina sees itself as a leader. Such criticism may be intended to enhance Argentina's international prestige, and perhaps to neutralize domestic critics.

Attitudes towards IAEA safeguards

One element of the international nonproliferation regime that has been especially problematic from the Argentinian viewpoint is IAEA safeguards. Argentina argues that these safeguards are all that is needed to prevent misuse of nuclear material, equipment and technology. While it is willing to accept safeguards on imported nuclear items and technology, it is unwilling to accept them for nuclear items produced without foreign help, i.e. full-scope safeguards. For Argentinian officials, acceptance of fullscope safeguards would deprive their country of the leverage it needs to assure access to foreign nuclear technology.

IAEA safeguards are also critized because of their expense, which require funds which otherwise might be used for technical assistance.

Attitudes toward U.S. policies

The Argentinians see the U.S. nuclear export and non-proliferation policies as discriminatory. While Argentinian officials see differences between the policies of the Reagan Administration and those of its predecessor, they do not expect the changes will benefit Argentina. Indeed, one official indicated that the change in the Reagan policy could lead to a more unified position among nuclear supplier states which would be detrimental to developing countries that import nuclear materials, technology and equipment.

Congressional Research Service
The Library of Congress

Washington, D.C. 20540

ARGENTINA'S NUCLEAR POWER PROGRAM: A STUDY

Joseph Pilat
Office of Senior Specialists
April 15, 1982

CONTENTS

PURPOSE..... 1

ARGENTINA'S NUCLEAR PROGRAM..... 2
Types of Reactors..... 2
Research reactors..... 2
Power reactors..... 2
Argentina's Use of Nuclear Power..... 2
Status of commercial power generation..... 2
Argentina's nuclear power strategy..... 6
Nuclear Research Facilities..... 7
Sources of Nuclear Technology..... 8
Domestic sources..... 8
Foreign sources..... 10

OTHER RESOURCES FOR NUCLEAR POWER..... 14
Nuclear materials..... 14
Nuclear industrial capabilities..... 15
Technical education..... 16

TABLES

Table I: Research Reactors in Argentina..... 3

Table II: Nuclear Power Plants in Argentina..... 4

PURPOSE

The purpose of this analysis is to present information on Argentina's nuclear activities with attention to types of reactors, its use of nuclear power, its nuclear research facilities, sources of nuclear technology and other resources useful for nuclear power. The overall picture shows Argentina making vigorous efforts to use nuclear power, and to become independent of other countries for the technology, materials and equipment needed. In addition, Argentina is seeking leadership in Latin American development of nuclear energy and power, and already is supplying some nuclear assistance to countries in the region and elsewhere.

An editorial note. Some information appears in several parts of this analysis. This has been done to assure completeness.

ARGENTINA'S NUCLEAR PROGRAM

Types of Reactors

Research reactors.--Argentina has five research reactors of various types in operation. (See Table I.) They range in power output from less than 1 megawatt thermal (MWt) to 3.5 MWt, and are fueled with uranium enriched to 20% or 90% U-235. They are used primarily for radioisotope production, research, and training.

A sixth reactor, of negligible power output, to be used for research and teaching at the Bariloche Atomic Center is being constructed. 1/

Power reactors.--Argentina has one power reactor in operation and two others under construction. All are pressurized, heavy water moderated reactors (PHWRs), fueled with natural uranium. (See Table II.)

Argentina's Use of Nuclear Power

Status of commercial power generation.--As of December 1981, Argentina had one nuclear power plant in commercial operation and two more in construction. When all are finished and in operation, the total generating capacity will be 1627 megawatts (MWe).

The Argentinian government has imported two PHWRs from West Germany and one from Canada. Because PHWRs use natural uranium fuel, Argentina does not need an enrichment capacity. However, this type of reactor requires heavy water, which

---

1/ La Prensa (Buenos Aires). May 30, 1981. p. 5. Translation in Worldwide Report: Nuclear development and proliferation. Foreign Broadcast Information Service. [Hereafter FBIS/NDP.] No. 103. July 2, 1981. p. 29.

TABLE I: RESEARCH REACTORS IN ARGENTINA

Unit	Operating Date	Location	Type	Fuel, Moderator	Power (MW)	Technical Program
RA-0	1965	University of Cordoba, Cordoba	Indiginous tank	MEU, Water	< 1	Training
RA-1	1958	CNEA, Buenos Aires	Indiginous tank	MEU, Water	< 1	Reactor physics research, radiation damage experiments, etc.
RA-2	1966	CNEA Buenos Aires	Indiginous tank	HEU, Water	< 1	Experiments on reactors kinetics and pulsed neutrons, critical mass determination, calibration of control rods, etc.
RA-3	1968	CNEA Buenos Aires	Indiginous pool	HEU, Water	3.5	Radioistope production, research
RA-4	1972	Rosario Natl. University, Rosario, Santa Fe	Imported Siemens homogenous	MEU, Water	< 1	Training in connection with study program.

Abbreviations: CNEA - Argentina National Atomic Energy Commission
MEU - Medium enriched uranium (enriched to 20 percent)
HEU - High enriched uranium (enriched to 90 percent)

Source: Research reactors in Member States, 1980. ed. (Vienna: International Atomic Energy Agency, 1980). pp. 5-9.

TABLE II: NUCLEAR POWER PLANTS IN ARGENTINA

Unit	Location	Power Output Net MWe	Type	Reactor Supplier	Architect Engineer	Constructor	Stage of Completion (percent)	Date of Commercialization
Atucha I	Lima, Buenos Aires	335	PHWR	Siemens	Siemens	Siemens/Imp	100	1974
Atucha II	Lima, Buenos Aires	692	PHWR	KWU	CNEA/KWU	CNEA/KWU	3	indefinite
Embalse	Embalse, Rio Tercero	600	PHWR	AECL	AECL/ Italimpianti	Italimpianti/ AECL	85	early 1983

Abbreviations: AECL - Atomic Energy of Canada, Ltd.
CNEA - Argentina National Atomic Energy Commission
KWU - Kraftwerk Union
PHWR - Pressurized heavy water reactor

Source: World List of Nuclear Power Plants. Nuclear News, February 1982. p. 83.

is expensive to produce. Argentina has an industrial scale heavy water plant under construction, supplied by Switzerland.

The Argentinian nuclear power program is behind its original schedule. Atucha 1 was two years behind schedule when it began commercial operation in 1974, and Atucha II and Embalse are, respectively, one and two years late. 2/

As indicated, Argentina has imported West German and Canadian reactor technology. However, its participation in the design and construction of reactors imported from abroad has been increasing and is expected to reach 80 percent by the year 2000. 3/ If at present, Argentina has not yet demonstrated an independent capability to design and build nuclear power plants, it has shown that it can operate nuclear power plants. Also, it has designed and built research reactors for domestic use and export. Argentina has also developed or is developing indigenous capabilities for uranium processing, fuel fabrication, production of zircaloy, heavy water production and reprocessing. 4/

Argentina sees itself as a nuclear leader among developing nations, a view which appears justified. With the only operating power reactor in Latin America, and the most advanced nuclear program in the region, there has been speculation that Argentina could become an important, if not a major, regional supplier of nuclear material, equipment and technology.

2/ Argentine Budget Reductions Delay Construction of Nuclear Power Plant. Journal of Commerce. March 8, 1982. p. 23B.

3/ Nuclear Engineering International. October 1981. p. 51.

4/ See. e.g., Energy Daily, September 24, 1980. pp. 3-4.

Argentina has agreements for nuclear cooperation with many nations in Latin America. Specifically, these are Peru, Colombia, Uraguay, and Brazil. 5/

It has negotiated, or is negotiating, agreements with countries outside the region, notably South Korea, Pakistan, Turkey and Egypt. 6/ Through such agreements, Argentina has offered training to foreign nationals, and has exchanged scientists and engineers with other countries. Moreover, it has exported such nuclear commodities as research reactors, zircaloy tubing, medical isotopes and uranium. 7/

Argentina's nuclear power strategy.--The Argentinian national nuclear plan authorized through decree 302/79 in 1979, provided for construction of four additional nuclear power plants of 600 MWe and their supplementary installations. 8/ If realized, Argentina would have six nuclear power plants -- all of them of the heavy water type -- with a total generating capacity of 3,400 MWe by the year 2,000. 9/ By the close of the century, Argentina expects to be able to provide all of the heavy water it requires, and to design and build additional nuclear power plants without substantial foreign assistance. 10/

5/ Mercado (Buenos Aires). July 30, 1981. pp. 2-26. Translation in FBIS/NDP, No. 113. September 14, 1981. p. 25.

6/ Ibid. p. 26.

7/ Ibid. pp. 25-31. Cf. New York Times, August 6, 1981. p. A2; Energy Daily, September 24, 1980. p. 4.

8/ La Prensa (Buenos Aires). May 31, 1979. p. 16. Translation in FBIS/NDP, No. 2. July 13, 1979. p. 44.

9/ Sam Moriarity, Argentina launches nuclear power drive. Journal of Commerce, April 21, 1980. p. 1.

10/ Nuclear Engineering International, Oct. 1981. p. 51.

Argentina is also interested in breeder reactors. The President of CNEA, Vice-Admiral Carolos Castro Madera, said that although Argentina has "no fixed ideas about breeders", the "breeder is a must." He said CNEA believed the Thorum-U-233 cycle was more suitable" to compliment Argentina's thermal reactors. 11/

Argentina's government clearly desires nuclear self-sufficiency so that it can be independent of external suppliers. This point was underscored by Admiral Cartu Madero in a recent statement upon start up of Argentina's first fuel fabrication plant. He called this plant a step toward nuclear fuel cycle self-sufficiency, "which would free Argentina from scientific and technological colonialism." 12/

Nuclear Research Facilities

Nuclear research in Argentina is conducted by the CNEA in three atomic centers, or research complexes: the Ezeiza Atomic Center, in Buenos Aires, with its RA-3 research reactor; the Constituyentes Atomic Center, also located in Buenos Aires, with its RA-1 and RA-2 research reactors and its heavy ion accelerator now under construction; and the Bariloche Atomic Center, at San Carlos de Bariloche, with a sixth research reactor which is near completion. Nuclear activities at these centers includes production of radioisotopes, reactor physics research, radiation damage experiments, experiments in reactor kinetics and pulsed neutrons, critical mass determinations, calibration of control rods, tests of prototype detectors and other equipment, measurement of nuclear parameters, and training. 13/

11/ Energy Daily, September 24, 1980. p. 4.

12/ Nuclear Fuel, April 12, 1982. p. 14.

13/ Research reactors in Member States. op. cit. pp. 5-6, 8.

With the heavy ion accelerator being built at Constituyentes, known as the Tandar project, Argentina will be doing research on nuclear physics, atomic phenomena and solid state physics, and astrophysics. 14/

Additionally, research reactors operated by the CNEA at the University of Cordoba and the Rosario National University (RNU) are used for training. 15/

Sources of Nuclear Technology

Domestic sources.--Argentina is seeking nuclear independence through the use of natural uranium reactors. Although it has yet to design and build its own nuclear power reactors, Argentinian participation in foreign design and construction of its power reactors has been increasing, and is expected to reach 80 percent by the year 2000. 16/

Already, CNEA has assumed certain responsibilities for construction of Atucha II, which Castro Madera said represents "a significant step forward toward qualifying the country in the various phases of design, installation, assembly and putting into operation of nuclear power plants." 17/ As well, CNEA in 1980 took over the role of principal construction contractor for the nuclear part of the Embalse plant. 18/

14/ Clarin (Buenos Aires). May 10, 1981. Supp. p. 19. Translation in FBIS/NDP. No. 102. June 29, 1981. p. 9.

15/ Ibid. pp. 7-9.

16/ Nuclear Engineering International, October 1981. p. 51.

17/ La Prensa (Buenos Aires), February 14, 1981. p. 4. Translation in FBIS/NDP, No. 87. March 23, 1981. p. 12.

18/ Ibid.

In November 1980, the Argentine government established the Argentine Nuclear Enterprise for Power Plants (ENACE), to design and construct nuclear power plants, and supply related components and equipment. It began operations immediately. ENACE's functions include basic engineering design of future power plants, project management, procurement, supervision of construction, assembly and startup, training of personnel and provision of operating and maintenance support service. CNEA holds 75 percent of the capital stock. Although the West German firm KWU holds the remaining 25 percent West Germnay and Argentina have agreed to a gradual phasing out of KWU's holdings to allow eventual Argentine ownership of the entire ENACE's stock. 19/

In December 1981, Vice-Admiral Carlos Castro Madera announced establishment of CONUAR, presumably an acronym for the Argentine Nuclear Company, with a majority of private capital, for the manufacture of fuel elements. The Government will reportedly continue to make decisions in this sector. 20/

Argentina's Nuclear S.A. is listed in the Directory of Suppliers in the 1982 Nuclear News' Buyers Guide, as offering the following nuclear services: architect/engineering; construction; engineer/construction; consultation; inspection; and quality assurance. 21/

Additionally, private Argentinian firms have supplied engineering, heavy equipment and components, and other equipment and services. 22/

19/ Ibid. pp. 11-12.

20/ La Prensa (Buenos Aires). December 27, 1981. p. 12. In FBIS/NDP No. 135, March 16, 1982. p. 19.

21/ Nuclear News. Buyers Guide Eighty-Two, Mid-March 1982. p. 481.

22/ Energeia (Buenos Aires). December 1981. No. 20. pp. 480, 486.

In a recent development of importance, the Argentine concern IMPSA was contracted to manufacture two steam generators, three cooling units for the moderator, and the pressurizer for Atucha II. 23/

Foreign sources.--Despite Argentina's drive toward nuclear independence and a developing domestic nuclear industry, Argentina remains dependent on nuclear assistance and exports from many countries. All of the power reactors in operation, under construction or planned, are using or are expected to use foreign technology, as is Argentina's heavy water production facility. Additionally, Argentina relies on foreign sources for various nuclear items and services, including enrichment, and has been seeking foreign investors to assist in the exploration and exploitation of Argentina's uranium resources. 24/

Major recent nuclear suppliers include West Germany, Canada, Switzerland, the United States, the USSR, and France.

The West Germans supplied Argentina's only foreign research reactor, the homogenous type SUR-100 reactor designed by Siemens.

As well, Siemens supplied the operating 335 MWe Atucha I PHWR, for which it also acted as architect/engineer and constructor. 25/ West Germany's KWU won the contract for Atucha II, a 692 MWe PHWR. Argentina's CNEA along with KWU will do the architect/engineering and construction work on Atucha II. 26/

23/ La Pressu (Buenos Aires). May 30, 1981. p. 5. Translation in FBIS/MDP, No. 103. July 2, 1981. p. 28.

24/ Nuclear Fuel, May 25, 1981. pp. 12-13.

25/ World List of Nuclear Power Plants, op. cit. p. 83.

26/ Ibid.

Interestingly, KWU contracted the Brazilian-German firm Nuclebras Heavy Equipment Corporation (NUCLEP), a Nuclebras subsidiary, for production of the lower part of the pressure vessel to be used in the Atucha II reactor. 27/

West Germany also is supplying uranium dioxide to Argentina for fuel fabrication. 28/ And, with equipment supplied by the West German concern Reactor Brennelement Union GmbH (RBU), Argentina is expanding its uranium dioxide conversion plant to an annual capacity of 150 tons/year. 29/

RBU had supplied fuel elements for Atucha I, but in March 1981 CNEA decided not to take up a pending option for a new shipment of fuel elements. Apparently it is expected that the Eizeiza Nuclear Fuel Elements factory (FECN), can fabricate the fuel. 30/

Canada's AECL is building a 600 MWe Candu type PHWR, which is expected to come on line in early 1983. AECL along with Italimpianti, a Canadian-Italian-Argentine consortium, are acting as architect/engineers and constructors for this nuclear power plant. Recent reports suggest that Argentina's next power reactor probably will be a Candu. 31/ One reason for CNEA's apparent "consensus" on the Canadian Candu model, although a decision will not be taken until 1983, is the ability of Argentinian industry to participate to a greater extent in

---

27/ Jornal do Brasil (Rio de janiero), January 10, 1982. p. 26. Translation in FBIS/NDP, No. 132, February 10, 1982. p. 34.

28/ Buenos Aires Herald, December 27, 1981. p. 9. Text in FBIS/NDP, January 25, 1982. p. 11.

29/ Energeia (Buenos Aires), No. 19. November 1981. p. 425.

30/ Ibid. p. 38.

31/ Nucleonics Week. April 1, 1982. p. 7.

construction, design, installation and component fabrication and supply for a Candu than for a PHWR supplied by KWU. 32/

Switzerland's Sulzer Brothers is supplying Argentina with equipment and processes for an industrial scale heavy water production facility with a capacity of 250 tons. To be built in Arroyitos, it is expected to come on line in 1984. 33/

Argentina has received nuclear materials and equipment from the United States. Most notably, between 1971 and 1973 Argentina received 31 Kg of highly enriched uranium from the United States for use as fuel in research reactors 34/ under an agreement for nuclear cooperation that extends to July 24, 1999, but has not yet been renegotiated as required by the NNPA.

The Soviet Union supplied rolling machines for Argentina's zircaloy pipe factory. 35/ Argentina has also purchased 5 tons of heavy water from the USSR, to replace normal operating losses at Atucha I. 36/ And, Argentina and the Soviet Union in early April 1982 concluded an agreement for an additional ton of heavy water for Atucha I, along with a service agreement for enrichment of Argentine uranium for use in CNEA's research reactors. 37/ Despite this

---

32/ Ibid.

33/ La Nacion (Buenos Aires), Mar. 31, 1981. Sec. 3, p. 2. Translation in FBIS/NDP, No. 99. June 2, 1981. p. 41.

34/ Data from DOE's Oak Ridge National Laboratory Computer System.

35/ Ibid.

36/ Jornal Do Brasil (Rio de janeiro) January 10, 1982. p. 26. Translation in FBIS/NDP, No. 132, February 10, 1982. p. 34.

37/ Diarios Noticias (Buenos Aires). April 6, 1982. FBIS. April 6, 1982.

activity, which is labelled as strictly commercial, there is at present no scientific and technical cooperation agreement between Argentina and the Soviet Union. Negotiations that could lead to such an agreement are reportedly underway, however. 38/

Finally, France was been involved in the construction of Argentina's four uranium milling plants. 39/

38/ Ibid.

39/ Energy Daily. September 24, 1980. p. 3.

OTHER RESOURCES FOR NUCLEAR POWER

Nuclear materials.--The extent of Argentina's uranium reserves is largely unknown. As of 1981, a CNEA official reportedly said that 90 percent of the country had not been explored for this resource. 40/

However, as reported in INFCE, Argentina has 23,000 tons of uranium reasonably assured at $80 per kilogram, and another 28,000 tons at $130/kg, with 13,000 tons additional estimated at $130/kg or less. 41/ The estimated annual production capability reported in INFCE was about 200 tons for 1980 and 680 tons by 1985. 42/

The plutonium contained in spent fuel discharged from Argentina's operating nuclear power reactor can also be considered a potential resource. The INFCE estimated the fissile plutonium content of cumulative spent fuel arisings in Argentina at 9.45 metric tons in 1985, 21.78 in 1990 and 95.56 by the year 2000. 43/

40/ Nuclear Fuel. May 25, 1981. p. 13.

41/ Fuel and heavy water availability. Report of Working Group 1. International Nuclear Fuel Cycle Evaluation. Vienna: International Atomic Energy Agency, 1980. p. 154.

42/ Ibid. p. 180

43/ Reprocessing, Plutonium handling recycle. Report of Working Group 4. INFCE. Vienna: IAEA, 1980. p. 268

Although many regard INFCE's estimates as overly optimistic, nonetheless there could be substantial quantities of plutonium contained in Argentine spent fuel within the next few years.

Nuclear industrial capabilities.--Argentina has in operation or under construction fuel fabricating facilities, a pilot and an industrial scale heavy water production facility, and a pilot reprocessing facility. As well, it has facilities for uranium dioxide conversion and for the production of zircaloy tube. Argentina's indiginous chemical, metals, and machinery industries are capable of producing at least some of the components and equipment required for nuclear power plants and supporting facilities.

Argentina has pilot facilities for the fabrication of natural uranium and highly enriched uranium fuel. 44/ And, the first of three fuel fabrication lines at the Conuar fuel fabrication plant at Ezeiza started up in April 1982, with an initial output of 280 assemblies/year. 45/ The other lines are scheduled for startup in 1984 and 1985. 46/

Argentina is constructing an experimental reprocessing plant with a 20 kg/day capacity. 47/ Recently Vice Admiral Castro Madero, President of Argentina's National Atomic Energy Commission, noted that construction of this

---

44/ IAEA, The Annual Report for 1980. GC(XXV)/642. July 1981. p. 59.

45/ Nuclear Fuel. April 12, 1982. p. 14

46/ Ibid. p. 11.

47/ John R. Redick, Nuclear Trends in Latin America. A paper prepared for the Aspen Institute Project on Governance in the Western Hemisphere, Nov. 1980. p. 5.

pilot reprocessing plant was "well under way" toward a startup in 1983; and said the project would not be stopped by "international pressure from London Club suppliers." That pressure, he said, amounts to economic blackmail. 48/

As for heavy water production, a pilot facility located near Atucha, with a capacity of . tons/year, is nearing completion. 49/ At the end of 1981, this facility was reportedly 60 percent completed. 50/ Additionally, the Swiss-supplied industrial-scale facility, upon which work commenced in 1980, is expected to be on line by 1984.

Also of note is Argentina's pilot facility for production of zircaloy. 51/ A zircaloy tube rolling plant based largely upon indeginous technology will reportedly begin operation in 1983. 52/

Technical education.--Argentina's CNEA, which comprises the nuclear research, establishment of the country, alone has between 1000 and 1200 nuclear scientists and technicians. 53/ Argentina has many institutions to provide advanced training in science and technology. It has eight national universities,

---

48/ Nuclear Fuel, April 12, 1982. p. 14.

49/ Ibid. p. 5.

50/ La Prensa (Buenos Aires). December 27, 1981. p. 12. Translation in FBIS/NDP, No. 138, March. 16, 1982. p. 20

51/ Redick, op. cit. p. 4.

52/ Energy Daily. September. 24, 1980. p. 3.

53/ Edward Schumacher, Argentina Strides Into Atom Age Without U.S. Aid. New York Times, August 6, 1981.

two of which have nuclear research reactors used primarily for training. 54/ The University of Buenos Aires' Faculty of Engineering has developed a postgraduate course in nuclear engineering. 55/

More important than the universities is the Balseiro Institute of the Bariloche Atomic Center, which was created by agreement between Cuya University and the CNEA in 1955. A Government school for nuclear physicists and engineers, the Institute is the center of Argentina's nuclear research establishment. With approximately 100 students and 100 teachers, Bariloche accepts some thirty college juniors per year for a program leading to the masters. Students receive a full scholarship and stipends. 56/

54/ Statesman's Year-Book, 1981-82. p. 94.

55/ La Prensa (Buenos Aires). May 30, 1981. Translation in FBIS/NDP, No. 103. July 2, 1981. p. 29.

56/ Schumacher, op. cit. p. A2.

Congressional Research Service
The Library of Congress

Washington, D.C. 20540

ARGENTINA'S CLOSENESS TO NUCLEAR WEAPONS

Warren H. Donnelly
Senior Specialist
May 12, 1982

CONTENTS

Summary 1

Analysis 2

Introduction 2

Argentina's access to nuclear weapons materials 3

Weapons grade uranium 3

Plutonium 4

Argentina's nuclear resources summarized 7

Argentina's human resources 8

Relevant policies and attitudes 8

Argentina's closeness to nuclear weapons: recapitulation 11

List of tables

Table I. Argentina's nuclear capabilities 9

Annex I Argentine plutonium from Atucha 1, some sample calculations. 14

CRS-1

SUMMARY

How close Argentina is to nuclear weapons is a matter of current interest within the Congress. From information available to the public, but without access to intelligence, it appears that Argentina, subject to certain assumptions, might be able to test a nuclear explosive by the mid-1980s, but could not to produce a nuclear arsenal until the 1990s at the earliest.

Argentina has no industrial capacity to enrich uranium and so could not follow this route to nuclear weapons.

As for plutonium, while Argentina has an operating nuclear power reactor that is producing notable amounts, this nuclear material almost certainly is not of weapons grade and most of it remains unrecovered in spent fuel. Argentina now has a minor capacity to recover that plutonium (reprocessing). This will be increased in a few years when an industrial pilot reprocessing plant comes into operation. At that time Argentina will have access to useful amounts of reactor grade plutonium. Whether it could successfully use this to make and test a nuclear device is not certain, although the chances appear favorable. That Argentina could go further and produce an arsenal of nuclear weapons from this material appears quite unlikely. As an alternative, Argentina could try to produce weapons grade plutonium with its power reactor. However to use this material for explosives would violate agreements that Argentina has made with the International Atomic Energy Agency, with West Germany and with the United States. Such violation could expose Argentina to possible sanctions and other counter-

measures by other countries. Alternatively, Argentina could build an unsafeguarded plutonium production reactor which would not be constrained by international agreements, but this would take time to build.

This assessment would change if Argentina is able to import nuclear weapons materials, or if technologies for plutonium isotope separation now being developed by the United States and perhaps other countries should be unexpectedly successful. Also, access to intelligence might cause changes.

ANALYSIS

Introduction

How close is Argentina to nuclear weapons? A precise answer to this question is not possible because so much of the reply would depend upon perceptions and interpretations as well as upon facts. Nonetheless, some idea can be had of Argentina's ability to make nuclear weapons. The critical elements include Argentina's access to nuclear weapons materials, to the facilities to produce these materials; and to human resources in the form of trained and experienced scientists, engineers and technicians. Important also are stated policies and attitudes. The examination of these matters earlier in parts I and II provide the basis for the following analysis, keeping in mind that it is not based upon intelligence, and that all information was obtained from open sources.

Argentina's access to nuclear weapons materials.

The two nuclear materials used to make nuclear weapons are uranium highly enriched in the U-235 isotope and high quality plutonium. Of these, highly enriched uranium would be simpler and easier to work with, and a reliable nuclear explosive probably could be designed and made without testing. On the other hand, plutonium appears to be the preferred material among nuclear weapons states. With plutonium, however, at least one test, and probably a series of tests, probably would be needed to complete design for a practical nuclear weapon.

Weapons grade uranium.-- Uranium in which the proportion of U-235 isotopes is increased from the 0.7 percent in nature to 90 percent or more can be used for nuclear explosives. The process of concentration of U-235 is called enrichment. Argentina has uranium, but no facilities to enrich it. Argentina has imported some highly enriched uranium, including some 59 kilograms from the United States. However, the U.S. Government will no longer authorize nuclear supplies to Argentina because that country will not agree to international inspection of all of its nuclear activities by the IAEA (full-scope safeguards) which is required by the Nuclear Non-Proliferation Act of 1978.

Argentina could try to buy highly enriched uranium from other suppliers. The United Kingdon, France and the Soviet Union all can produce weapons grade material. However, such supplies appear unlikely. A recent agreement for enrichment services between the Soviet Union

11-269 O - 83 - 10

and Argentina limited the enrichment to 20 percent.

Argentina could try to build an enrichment plant. However it probably could not do so on an industrial scale without help. Part of the price for such help probably would be Argentine agreement to international inspection of the facility and a commitment not to use it for nuclear explosives. To date, the major nuclear supplier states have honored the requirement of the Nuclear Non-Proliferation Treaty that their nuclear supplies be under IAEA safeguards.

On the whole, it appears unlikely that Argentina could build an industrial scale enrichment capability during the 1980s, although it might be able to develop laboratory scale processes. Lacking an enrichment capability, Argentina probably could not make nuclear weapons from highly enriched uranium during the coming decade.

Plutonium.-- If Argentina wanted to make nuclear weapons, plutonium would be the nuclear material indicated. Plutonium is made by exposing atoms of U-238 to neutrons in a nuclear reactor. The used (spent) fuel upon discharge would contain some plutonium. This can be recovered by cutting up the spent fuel, disolving it and separating the plutonium by chemistry (reprocessing). A complicating factor is the quality of the plutonium. The plutonium isotope prefered for nuclear weapons is Pu-239. However, another undesirable isotope, Pu-240, is also present. Its concentration increases with the time the uranium spends in a reactor. Ideally, weapons grade plutonium should not have more than 6 percent Pu-240. However, plutonium from commercial nuclear power reactors can have 20 percent or more Pu-240.

Whether Argentina could make and test a nuclear explosive and, later, nuclear weapons from reactor grade plutonium is controversial. The Office of Technology Assessment advised Congress in 1977 that militarily useful weapons with reliable yields in the kiloton range could be made with such plutonium. Likewise the Nuclear Energy Policy Group in its 1977 report, which provided much of the foundation for President Carter's non-proliferation policy, cautioned that reactor grade plutonium could be used to make nuclear weapons, although it also noted the difficulty of designing, planning and making a weapons from this material. According to this report, these problems, while not insoluble, would require substantial knowledge, planning and extraordinary care in execution. While the presence of Pu-240 would substantially impair the explosive power (yield) of a simple device, sophisticated design could produce full yield. More recently, in February 1980, the report of the International Nuclear Fuel Cycle Evaluation, which was initiated by President Carter, noted that use of commercial grade plutonium is an unattractive route to nuclear weapons in comparison with weapons-grade material. However, reported INFCE, the United States government had declared that commercial grade plutonium could be used for weapons purposes and this statement had not been challenged by other nuclear weapons states. Also, the IAEA itself has always safeguarded plutonium without distinction as to its isotopic content. On the other hand, no nuclear weapons states to date have used reactor grade plutonium to make their nuclear weapons.

What all of this means is that Argentina might be able to make and test a nuclear explosive with reactor grade plutonium, but it seems

unlikely that Argentina could use it to produce an arsenal.

Argentina's research reactors, particularly the one of 3.5 megawatts power, can produce minute quantities of plutonium useful for laboratory scale studies of reprocessing and to get working experience with its chemical, physical and nuclear properties. Argentina's nuclear plans have for some time included a powerful research reactor, designated RA-7, with a power output of 40 to 100 megawatts which might produce some 15 or more kilograms of plutonium a year, depending upon design and size. Such a reactor could be operated to produce weapons grade material. However, there are no reports of a decision to begin construction.

Argentina's nuclear power reactors are a source of plutonium. Argentina has one operating nuclear power plant, Atucha-1, which has an electrical generating capacity of 335 megawatts electrical, and expects to have its 600 MWe Embalse plant working early in 1983. These reactors produce plutonium. In normal commercial operation, Atucha I could produce about 130 kilograms of reactor grade plutonium a year and Embalse about 235 kilograms, for a potential total of about 360 kilograms a year. Assuming a nuclear explosive could be made with 10 kilograms of this material, in theory this amount could produce 36 weapons annually. However, for this plutonium to be useful, it has to be separated from the spent fuel that contains it. Argentina's new pilot reprocessing plant at full operation could separate about 85 kilograms a year. So Argentina can produce plutonium faster than it can be separated from spent fuel.

Argentina in theory could produce weapons grade plutonium either by operating a commercial power reactor -- logically Atucha-1 -- for this purpose, or by building a plutonium production reactor. The former would require running about six times as much uranium through Atucha-1 per year, with an implicit sixfold increase in fuel fabrication and also in reprocessing because the concentration of plutonium would be about one-sixth that for commercial operation. In such circumstances, Argentina's new pilot plant could separate about 13 kilograms of weapons grade material a year.

As a rule of thumb, to make one nuclear explosive requires about twice the material included in the device. The remainder is scattered about in processing equipment, shops and laboratories. With this in mind, and noting that spent fuel has to cool for about a year before reprocessing, some three years would have to pass from the time Argentina might begin to operate Atucha-1 as a plutonium producer to the time when useful quantities of weapons grade material could be available.

Argentina's nuclear resources summarized.-- Argentina today is well on the way to having its own independent sources of materials and industrial facilities needed to produce materials for nuclear weapons. Two notable gaps remain. One is a source of weapons-grade plutonium independent of nuclear power plants. The other is an industrial scale reprocessing plant. The former probably will

remain opon for many years. The latter will be closed in 1984 if construction and start up of the pilot reprocessing plant is on schedule. Table I summarizes the present state of Argentina's nuclear capabilities and indicates applicability of IAEA safeguards.

Argentina's human resources.

Argentina has many schools and universities able to produce scientists, engineers and technicans trained in nuclear science and technology. It has eight national unversities, two of which have small research reactors. The University of Buenos Aires offers post graduate training in nuclear engineering. Also the Balseiro Institute of the Bariloche Atomic Center, which is the center of Argentina's nuclear research establishment, trains students to the master's level. In 1981, it was reported that Argentina's Atomic Energy Commission (CNEA) had from 1000 to 1200 nuclear scientists and technicians. Argentina commercial nuclear power plants also are giving many engineers and technicans practical working experience, while its pilot reprocessing plant will soon be providing more experience in that critical part of nuclear technology. Moreover, Argentina has benefited from the flight to that country of leading German nuclear scientists and engineers at the end of World War II. The importance of these German expatriates was underscored recently by a BBC television documentary on Argentina's nuclear interests.

Relevant policies and attitudes

Official Argentine statements support the use of nuclear power and show a desire to be independent of other nuclear suppliers. Indeed, it would

TABLE I

ARGENTINA'S NUCLEAR CAPABILITIES

Type of nuclear facility	Status	IAEA safeguards Yes	No
Uranium mines	Operating		X
Uranium mills	Operating		X
Uranium conversion	Operating		X
Fuel fabrication	Operating		X
Heavy water production			
Pilot plant	Operating		X
Industrial plant	Under construction	X	
Enrichment	None		
Power reactors			
Atucha I	Operating	X	
Atucha II	Under construction	X	
Embalse	Under construction	X	
Other notable reactors			
40-100 MW research type.	Planned		X
Reprocessing			
Pilot plant	Under construction	X*	

* IAEA safeguards will follow nuclear materials that Argentina has agreed are subject to safeguards, primarily spent fuel from imported reactors. However Argentina has no safeguards agreement covering the pilot plant and so could reprocess domestically produced materials without safeguards.

become a nuclear exporter itself.

As for nuclear weapons, the official statements are ambiguous. While its government has disclaimed intention to acquire nuclear weapons, Argentina will not make the no-nuclear-weapons pledge of the Non-Proliferation Treaty. Despite repeated assurances of its intent to do so, Argentina has yet to ratify the nuclear free zone treaty for Latin America (The Treaty of Tlatoloco) which contains an equivalent pledge. Also, Argentina asserts its right to develop peaceful nuclear explosives which, from the viewpoint of the United States are virtually the same as nuclear weapons. On the other hand, the public record gives no indication of an Argentine decision to try for nuclear weapons or that it has begun any clandestine attempt to make them.

Argentina has entered into some limited non-proliferation agreements. It has agreed not to use imported nuclear items for nuclear explosive purposes and has agreed to IAEA safeguards for its research and power reactors, but not for its pilot reprocessing plant or for its uranium milling and conversion activities. Argentina also agrees that safeguards can follow nuclear materials under safeguards through reprocessing and to ultimate use. It has further agreed to accept safeguards for the industrial scale heavy water plant now under construction. On the other hand, Agentina adamantly rejects IAEA full scope safeguards. The safeguards situation is further complicated by Argentina's choice of power reactors which can be refuelled without being shut down.

As its nuclear export policy, Argentina has required IAEA safeguards for at least one Argentinian export, and Vice Adm. Madero

of the CNEA has said Argentina would require them for exports of plutonium. Argentina's nuclear export policy partially resembles that of the Reagan administration in that it is willing to supply plutonium to countries with fast breeder programs subject to IAEA safeguards and to peaceful use assurances. Adm. Madero recently summed up Argentina's position as follows: 1/

> Argentina's position is to use nuclear power for peaceful purposes only, for which it strongly support the efforts made against proliferation, but at the same time, we do not support the idea of privileges for certain countries. We oppose NPT being applied in such a way as to violate the principle of equality in international relations. The viable method for prevention of nuclear proliferation is international cooperation linked with IAEA safeguards. On these basic attitudes, Argentina is proceeding to cooperate with other Latin-America countries in the nuclear field.

Argentina's closeness to nuclear weapons: recapitulation

How close Argentina is to nuclear weapons depends fundamentally upon its access to nuclear weapons materials. On the whole, Argentina is getting closer to an ability to make nuclear weapons. It probably could test a nuclear explosive in the mid-1980s if it is willing to run the risks of getting caught at diverting safeguarded materials or of abrogating its safeguards agreements. Should it decide to build a plutonium production reactor unconstrained by safeguards, by the late 1980s it probably could have enough weapons grade plutonium outside of safeguards to design and build a nuclear explosive. As for production of a nuclear arsenal, if Argentina could successfully design workable nuclear weapons from reactor grade plutonium, and

---

1/ Carlos Castro Madero. The nuclear power development strategy in Argentina. Atoms in Japan, March 1982, p. 12.

was able to use safeguarded materials with impunity, it might be able to produce nuclear weapons in the late 1980. If Argentina succeed in doing so, its success would greatly increase fears that reactor grade plutonium could be readily made into nuclear weapons.

If Argentina were to decide instead to use weapons grade plutonium, it would have to expand its reprocessing capacity substantially and probably would have to build a separate plutonium production reactor. The engineering and construction involved probably would push back the time for which Argentina could have a nuclear arsenal into the 1990s.

A final note. While this analysis has focused upon what capabilities Argentina might have to make nuclear weapons, Argentina's statements discussed in Part II do not indicate an Argentine decision make nuclear weapons.

CRS-14

ANNEX I

ARGENTINE PLUTONIUM FROM ATUCHA-I, SOME SAMPLE CALCULATIONS

Case I: Normal Commercial Operation

1. Plutonium production

Atucha-1 is a pressurized heavy water type reactor fueled with natural uranium, with an electrical generating capacity of 335 MWe. Its annual plutonium production can be estimated at 130 kilograms a year of reactor grade plutonium, based upon information in the DOE's NASAP report of 1980. 1/

According to NASAP, a standard reactor of this size with an electrical output of 1,260 MWe would produce 490 kilograms of plutonium a year at a burnup of 6,300 megawatt days per metric ton (MWd/t). 2/ Note, the amount of plutonium generated depends upon low long the fuel is used and upon power output of the reactor. These two factors are combined in the measure of megawatt days per tonne.

On this basis, Atucha I would produce $490 \text{ kg/y} \times \frac{335 \text{ MWe}}{1260 \text{ MWe}}$

= 130 kg of plutonium a year.

2. Quality of the plutonium

NASAP indicates that of the 490 kg of plutonium produced, 361 kg would be fissile, indicating the material would be 74% Pu-239, with most of the rest Pu-240.

In comparison, weapons grade plutonium is 93% or more Pu-239.

1/ U. S. Department of Energy. Nuclear proliferation and civilian nuclear power. Report of the Nonproliferation Alternative Systems Assessment Program, Vol. IX, Reactor and fuel cycle description, Report no. DOE/NE-0001/9, June 1980. (NASAP report)

2/ Ibid, p. A-42.

CRS-15

Spent fuel produced.

NASAP information indicates that Atucha-1 in normal operation would produce about 38,200 kilograms, or 38.2 metric tons of spent fuel a year.

According to NASAP, a standard PHWR would produce about 143,600 kg of spent fuel a year. On this basis, the Atucha spent fuel production would be:

$$\text{Spent fuel} = 143{,}600 \text{ kg/y} \times \frac{335 \text{ MWe}}{1260 \text{ MWe}}$$

$$= 38{,}200 \text{ Kg/y.}$$

Time to reprocess

The reported design capacity for Argentina's pilot reprocessing plant is 25 metric tons a year. On this basis, it would take about 18 months at full capacity to reprocess one year's discharge from Atucha-1, at an average rate of 7.2 kg plutonium separated per month, or about 87 kg per year.

$$\text{Time to reprocess} = \frac{38.2 \text{ mt}}{25 \text{ mt/y}} = 1.48 \text{ years, = about 18 months.}$$

CRS-16

Case II. Plutonium production operation

Production of weapons grade plutonium requires a lower burnup for the fuel and, consequently, more frequent fuel changes. The plutonium per unit of spent fuel discharged is less. The following sample calculations assume that these differences from normal spent fuel depend upon the ratio of burnups.

Typically, the production of weapons grade plutonium limits burnup to about 1,000 MWd/t.

If Atucha-1 were operated to produce this material, it would require about 235 metric tons of fuel annually. The separation of plutonium would be much less, at about 13.8 kilograms per year.

Fuel requirements:

$$= 38.2 \text{ mt/y (commercial mode)} \times \frac{6300 \text{ MWd/t}}{1000 \text{ MWd/t}}$$

$$= 235 \text{ metric tons/year (production mode)}$$

Plutonium per fuel change:

$$= 130 \text{ kg (commercial mode)} \times \frac{1000 \text{ MWd/t}}{6300 \text{ MWd/t}}$$

$$= 20.6 \text{ kg (production mode)}$$

Plutonium separation per year:

$$= 87 \text{ kg/y (commercial mode)} \times \frac{1000 \text{ MWd/t}}{6300 \text{ MWd/t}}$$

$$= 13.8 \text{ kg/y (production mode)}$$

○